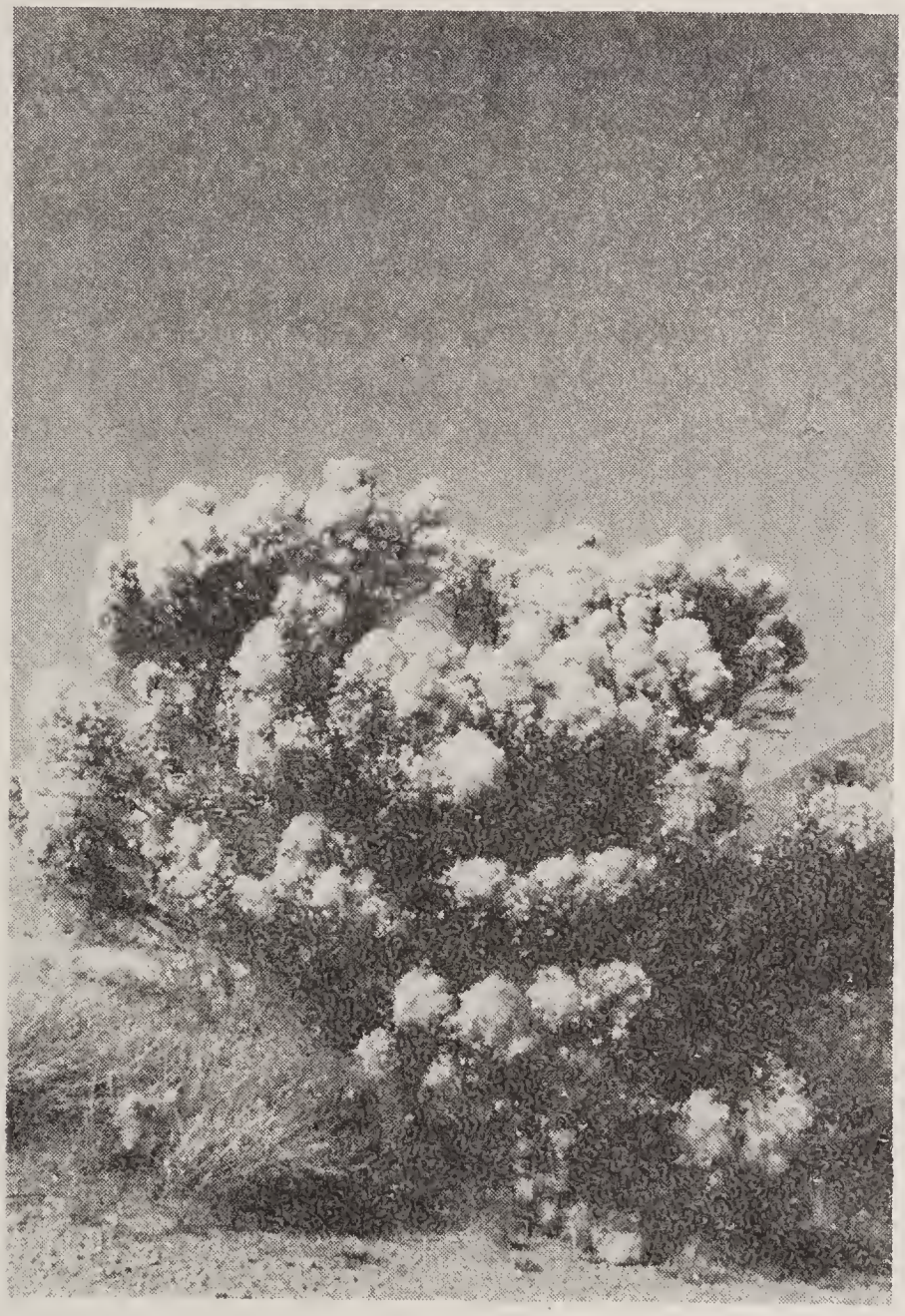
SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI January, 1972 No. 1



REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXVI | January, 1972 | No. 1

Arizona Cactus and Native Flora Society

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Cover: "Desert Snow," *Baccharis sarothroides*

Desert Botanical Garden of Arizona

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Editor's Notes

JANUARY confronts us with the fact that another year of varied activity had again been accomplished and another year of planning is joyously ahead of us. A Botanical Garden has so many interesting facets to its ever-increasing operation. There are no dull moments, each day can be considered a holiday in some fashion, because our programs are so flexible, at least our Garden seems that way.

The loyalty of our staff and the energy of our increasing number of volunteers make our plans a joy to execute.

In this Bulletin you will find an Entry List for our **25th Annual Cactus Show** to be held February 20-27. It hardly seems possible that I've shared in each show. Fortunately, John Weber, our horticulturist, has staged the last twelve shows, which has freed me for at least some of the other administrative duties, though all of us are extremely busy during show time.

Look over the Entry List, for now is the time to ready your plants, arrangements, dish gardens and art exhibits for the Show which attracts a large attendance and receives much attention from the news media.

Two recent publications are of interest to Garden Members. In the quarterly **Economic Botany**, Vo. 25, No. 3, July-Sept. 1971 there is a paper on **Carnegia gigantea**, "The Saguaro and its Uses" by Jan G. Bruhn of the Department of Pharmacognosy, Faculty of Pharmacy, Stockholm. It is most interesting that a person living so far from his subject can do such an excellent job of research — an example of the value of research libraries.

Bruhn's paper covers botanical, ethnobotanical and chemical aspects of the Saguaro. It was a pity that the author did not have access to Benson's Cacti of Arizona (published a year after Bruhn's paper was written) for Benson's coverage of the Saguaro's distribution, nomenclature and uses would have supplied him with much valuable information, but that's the frustrating way things happen in the field of scientific publishing.

Acknowledgments of assistance are given to your Editor, R. A. Countryman of the Arizona State Commission of Agriculture, Raymond Carlson and Marge Patterson of Arizona Highways Magazine.

Do stop in at our Richter Library to read this very fine resume of the many uses of our giant cactus.

In the same issue of Economic Botany, Reid Moran of the Natural History Museum, San Diego, writes a most interesting book review of a book whose title startled us. The book is "Cacti of the Southwest" by Del Weniger, U. of Texas Press, 1970. We seem to recall (as the reviewer did) a "Cacti of the Southwest" published in 1963 by W. H. Earle, which covered Arizona, western New Mexico, southern Colorado, southern Utah, southern Nevada and eastern California. Well, Dr. Weniger is from Texas, and he feels that the Southwest means only Texas, New Mexico, Arkansas and Louisiana. We in the Southwest know differently.

(Continued on page 12)

THE YUCCA-FEEDING GIANT SKIPPERS OF ARIZONA (LEPIDOPTERA: MEGATHYMIDAE: MEGATHYMINAE)

By Ronald S. Wielgus

During their brief existence as adults there is no intake of nourishment. Mouthparts are aborted and vestigial. Instead, energy is derived from an abundance of fat concentrated in the abdomen. Short, pointed wings powered by massive flight muscles make these butterflies exceedingly swift and erratic. Net captures are more often the result of a chance circumstance, as when an unwary specimen is resting on a **Yucca** leaf or a rock. Flight times are generally in the morning hours and again in late afternoon, in bright sunlight. The female usually lays but one egg to a plant, glueing it to the underside of a leaf. Plants selected to receive eggs may be widely separated. Some **Yucca** clusters for yards around may be devoid of larvae while, in some instances, a single cluster may harbor four or five infested plants. Plant selection by the female is probably governed by many factors but, in general, it has been found that a preference is shown for young, vigorous plants or offshoots.

Left: Eggshell of *Megathymus ursus ursus* Poling on leaf of *Yucca schottii* Engelmann. Right: Third instar larva of new subspecies of *M. ursus.*

In collecting the larvae of **Megathymus** species it is necessary to remove the infested plant from the soil. Inasmuch as all species of **Yucca** are protected by law in Arizona, it is mandatory that a collecting permit be secured for the removal of native plants. If collecting is to be done within any of the national forests, a Forest Service plant permit in addition to the state permit will also be required.

The collecting of larvae is best done during that time of the year in which the larvae have attained maturity and are dormant. For **navajo** and **arizonae** the months of November through January are ideal; for **ursus** it would be the months of February through May. The life history of **streckeri** is unknown.

The author uses the following method in locating larvae in the field. After first discovering a likely-looking colony of **Yucca**, proceed to inspect each plant visually for evidence of larval activity. It may be necessary to do a considerable amount of walking in hazardous terrain, therefore heavy leather hiking boots are essential. The **Yucca**

colony is usually criss-crossed until virtually all plants will have been inspected. Continued success in the discovery of infested plants leads to a trained eye capable of recognizing signs of larval activity from a distance of up to twenty feet or more. Upon discovering an infested plant it is to one's best advantage to first trim off the dagger-like leaves, which is accomplished through the use of pruning shears. The plant itself can then be safely removed by employing a mattock or sharp-pointed shovel. Care must be exercised in removal so as not to injure the larva. Plants with larvae are stored outdoors in ordinary cardboard cartons in a dry state. These should be brought indoors in late January, or about the time that the larvae begin to construct a loosely woven closure at the tent apex. No further care is necessary until the adults emerge. Killing of the adults by pinching the thorax and immediate freezing is the method used by the author. Afterward, individuals are defrosted, pinned, spread and labeled with significant data.

Much work remains to be done on the **Megathymus** of Arizona, especially with regard to distribution and life history studies. The key appears to be a careful survey of all known **Yucca** colonies in the state in order to better acquaint us with this unique group of insects.

LITERATURE CITED

DOS PASSOS, C. F., 1964. A synonymic list of the Nearctic Rhopalocera. Lep. Soc. Mem., No. 1, New Haven, Conn. v 145 pp.

FREEMAN, H. A., 1969. Systematic review of the Megathymidae. J. Lep. Soc., 23, Supplement 1, 58 pp., 1 pl.

KEARNEY, T. H. and R. H. PEEBLES, 1960. Arizona Flora. University of California Press, Berkeley. 1085 pp.

STALLINGS, DON B. and J. R. TURNER, 1956. Notes on **Megathymus ursus**, with description of a related new species. Lep. News, 10:1-8.

WIELGUS, RONALD S., JOSEPH R. and DALE, 1971. Additional notes on the distribution and foodplant preferences of **Megathymus coloradensis navajo** Skinner. J. Res. Lep., in press.

———, 1972. A new subspecies of **Megathymus ursus** Poling (Megathymidae) from Arizona with observations and notes on its distribution and life history. J. Res. Lep., in press.

Pupa of *M. u. ursus* reared from *Y. schottii*.

Arizona Wildflower

Phlox amabalis

Polemoniaceae
Phlox Family

One author says this "amiable" little phlox is purple, another says pink, another bright pink. A lot of the wild phloxes do vary in color within the same species, but the plants of P. amabilis that we have seen have been all bright pink. Still, you may come across a purple plant, so be warned.

At any rate, the flower is distinctive. The corolla tube has five deeply notched lobes, and the stamens and styles are nearly as long as the tubes. In the only similar phlox, P. woodhousei the stamens and styles are much shorter.

When the flower opens, the five lobes look like five small hearts, but as the flower ages the sides of the lobes curl under and the corolla looks more like a big pink asterisk.

This is a perennial plant, four to twelve inches tall, a low, compact plant with thick oblong opposite leaves, the uppermost leaves hairy.

Like others of the same genus, P. amabilis usually flowers twice a year: in spring and after summer rains. It grows in thickets and open woods on rocky slopes in southern Coconino County, Yavapai County and Graham County in Arizona, and in no other state. Our herbarium has sheets of this plant collected in Prescott, Granite Dells and Whipple, all in Yavapai County where the plant was originally collected.

REFERENCES
Kearney & Peebles, Arizona Flora
Rickett, Wild Flowers of the United States, Vol. IV

—LD

A whole plant of *Phlox amabilis*, showing how profusely it flowers. Lobes are curled on all but the newly-open flower at upper left.

ASPECTS OF THE DESERT

You really should visit the Boyce Thompson Arboretum near Superior, 63 miles east of Phoenix. Thirty acres of mature arid-land trees, shrubs and cacti laced with trails for visitors. Since 1965 it has been the site of the University of Arizona Desert Biology Station.

Mexican Cactus

GIANT PINCUSHION
Mammillaria gigantea

Cactaceae

The Gargantua of the Pincushion World is this **Mammillaria gigantea** which grows up to ten inches tall and eight inches in diameter. It is a single plant with a sunken apex filled with wool between tubercles set in thirteen to twenty-one spirals. The body of the plant is grayish green. The milky sap coagulates on the surface when the plant is bruised or cut.

M. gigantea is well protected with spines. Its four to six centrals are one-half to three-quarters of an inch long, stout, curved or recurved, and their color is at first reddish-purple with brown to black tips, which becomes a grayish-horn color with age. The twelve quarter-inch-long radial spines are white.

Flowers are funnelform, one-half inch in diameter, and form a dark pink circle on the apex of the plant through April and May.

The fruit are 1½ inches long, purplish-pink when ripe. Seeds are light tan. The palatable fruit form a colorful wreathlet on top of this large plant.

This is a good horticultural species, as it does not need much care. Precautions against sunburn have to be taken in the hot desert, as the plant grows in low and high bush country at 3500-4500 ft. elevations.

Type locality: Guanajuato and Queretaro, Mexico.

Distribution: Within an hour's drive around the city of Guanajuato, on shaded hillsides and under shrubs and trees.

REFERENCES

Britton & Rose, Cactaceae
Craig, Mammillaria Handbook

—WHE

You can see why this Mammillaria is named *gigantea* when you compare it with the pick lying beside it.

GOING UP! Our new herbarium is nearly ready.

Arizona Cactus

ROBUST STRAWBERRY HEDGEHOG

Echinocereus robustus

Cactaceae

This is a lovely, sturdy, large-stemmed plant that produces many exciting shades of magenta when it flowers in early May.

Stems are numerous, up to twenty in a cluster, ten to eighteen inches tall bearing solitary central spines one to three inches long, light gray tipped with black. Centrals are at right angles to the stem, or deflexed. The spreading radial spines are uneven in length, a half-inch long or less.

The brilliant flowers begin to open in early April and flowering continues into early May. The fruits are ripe in about a month. They are heavily spined at first, but the spines fall off when the fruit is ripe. They are appreciated by man and beast for their juicy tart-strawberry taste.

An unusually complex problem arose when Dr. Lyman Benson searched the area of type collection, "south side of the Gila River near the mouth of the Bonanza Creek", for **Mammillaria fasciculata** and was unable to locate such a plant. No specimens had been filed when it was discovered in 1848 by Lt. W. H. Emory on his reconnaissance from Ft. Leavenworth to San Diego. Dr. Benson reasoned that the plants Emory collected, still quite easy to locate in the area, must have been **Echinocereus robustus** and not **Mammillaria fasciculata**.

Writers of books on cacti have all been misled into the belief that this was the type locality for **M. fasciculata**, whereas the so-called **M. fasciculata** is in reality **M. thornberi**, described by Orcutt in American Western Science 1902 and found south of Sells, Arizona.

This sleuthing by Dr. Benson is clearing up many of our taxonomical and nomenclature problems, as shown in his revised third edition of "Cacti of Arizona". This book will be our guide for future publications.

E. robustus was described in 1938 by Peebles as **Echinocereus rectispinus** var. **robustus**, and in 1944 by Benson as **E. fendleri** var. **robustus**. Now Benson has named it **E. fasciculatus** var. **robustus** because of prior use of specific name.

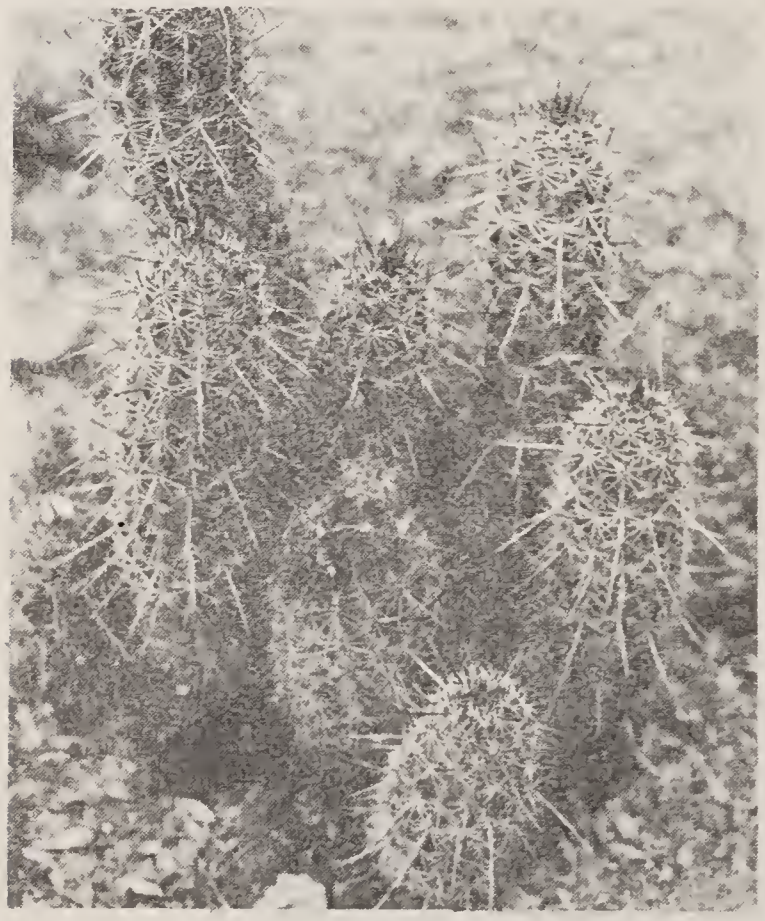
Type locality: In vicinity of the entrance of Bonanza Creek into the Gila River.

Distribution: In sand, gravel or rocks of hills and washes 2500-5000 ft. elevation in the Arizona desert from Yavapai County and Oak Creek Canyon south in the high deserts to Pima and Cochise Counties.

REFERENCES

Benson, Cacti of Arizona
Earle, Cacti of the Southwest

—WHE



Echinocereus robustus with stems three to twelve inches tall.

Desert Trees and Shrubs

WHITE RATANY

Krameria grayi Rose & Painter

Leguminosae
Pea Family

White Ratany's small purple flower is shown here twice natural size.

Krameria grayi is a small to medium straggling shrub to 60 cm., only rarely reaching one meter in height. It is erect or semi-prostrate with many spinescent branches and woody stems. The stems of new growth are whitish and densely covered with matted, intertangled hairs. On ageing these stems become smooth and gray. The small alternate leaves are simple, entire, and linear to narrow-lanceolate in shape. These are 3 to 15 mm. long and are without petioles. There is a grayish pubescence of silky hairs and the plant often has a grayish-purple appearance. Flowering occurs through a long period, April to September, and the flowers are borne on the branchlets in racemes, or solitary in the axils. The very showy reddish-purple to purple, irregular flowers are about 13 mm. across. There are five petals and five sepals, the petals being smaller. The three, narrow, upper petals are long-clawed, separate and are 3 to 7 mm. in length. Reduction of the lower two petals has left them as fleshy glands. There are four more or less united stamens in unequal pairs. Stigma is linear. The egg-shaped spiny ovary is one celled. Fruit is a dry, thick walled, indehiscent, globose achene. It is about 8 mm. long and contains a single seed. The fruit is very spiny, with each spine having three or four barbs at its apex. Many of the fruits do not fill and it is often difficult to obtain any quantity of seed.

Fruit of *K. grayi* magnified about four times. Note the barbed spines.

White Ratany has a distribution that extends from western Texas across New Mexico and Arizona into southern California, north into southern Nevada and south into Chihuahua and Coahuila, Mexico. In Arizona, at elevations below 1220 meters (4,000 ft.), the species is found growing on dry plains and mesas in Mohave, Maricopa, Pinal, Pima and Yuma counties. It is very drought-re-

sistant and is thought to be a root parasite of other desert plants.

Propagation by seed requires no pretreatment for germination. The primary problem is finding seed that has filled in the fruit. While **Krameria grayi** is found occasionally growing in partial shade under other plants, it achieves optimum growth in full sun and well-drained soils.

White Ratany is an attractive flowering shrub for a desert garden. It is barely perceptible during periods of drought, but after a rain and when in flower it commands attention with its regal color.

REFERENCES:

Kearney & Peebles, Arizona Flora.
Standley, Paul C., Trees and Shrubs of Mexico.

—JHW

EDITOR'S NOTES—

(Continued from page 3)

Reid Moran's detailed review emphasizes the fact that thirty-six of Weniger's new combinations are illegitimate, as there are no synonymies, no maps, no citations of specimens. References in the text are few and incomplete.

The book is addressed to cactus collectors and growers, and has a non-technical approach to taxonomy and nomenclature. Its 184 colored photos and 65 plates in 249 pages might justify the twenty-five dollars you would spend to add it to your book collection, but to save your money, look at it in our Richter Library.

GARDEN ACTIVITIES

JANUARY

Tues.	4th	CACTOMANIACS — "Hydroponic Growing through Hydroculture", R. J. Galliva, Hydroculture, Inc.	8:00 P.M.
Wed.	5th	CLASSES — Desert Plants	3 & 8 P.M.
Thurs.	6th	LECTURE — Arizona Birds	3:00 P.M.
Wed.	12th	CLASSES — Succulent Plants	3 & 8 P.M.
Thurs.	13th	LECTURE — Arizona Scenics	3:00 P.M.
Wed.	19th	CLASSES — Culture of Succulent Plants	3 & 8 P.M.
Thurs.	20th	LECTURE — Collecting in Mexico	3:00 P.M.
Tues.	25th	PHOENIX BONSAI SOCIETY — How to do Rock Plantings (slides)	7:30 P.M.
Wed.	26th	CLASSES — Desert Trees and Shrubs	3 & 8 P.M.
Thurs.	27th	LECTURE — Arizona Cacti	3:00 P.M.

FEBRUARY

Tues.	1st	CACTOMANIACS — "Arizona Native Plants Law", R. A. Countryman, Chief of Division of Compliance, Arizona Agriculture Commission	8:00 P.M.
Wed.	2nd	CLASSES — Cultivation of Trees and Shrubs	3 & 8 P.M.
Thurs.	3rd	LECTURE — Arizona Wildflowers	3:00 P.M.
Wed.	9th	CLASS (afternoon) FIELD TRIP — Pinnacle Peak	8:30 A.M.
Thurs.	10th	LECTURE — Arizona Trees	3:00 P.M.
Sat.	12th	CLASS (evening) FIELD TRIP — Pinacle Peak	8:30 A.M.
Wed.	16th	ART ENTRIES DUE FOR CACTUS SHOW	before 5:00 P.M.
Sat.	19th	ALL OTHER ENTRIES DUE FOR CACTUS SHOW	before 1:00 P.M.
Sun. 20th thru Sun. 27th		25th ANNUAL CACTUS SHOW	daily 9-5 P.M
Tues.	29th	PHOENIX BONSAI SOCIETY — Collecting Bonsai (slides)	7:30 P.M.

THE DESERT BOTANICAL GARDEN
P. O. Box 5415
Phoenix, Arizona 85010

1-72

ARIZONA CACTUS & NATIVE FLORA SOCIETY, INC.

THE DESERT BOTANICAL GARDEN

Ballot for annual election of Board Members. Please vote for two members and mail in time to reach Phoenix by May 1st, 1972.

REG MANNING ..... ☐

CHARLES MEIG ..... ☐

Use these lines for 'write-ins':

..... ☐

..... ☐

..... ☐

TWENTY-FIFTH ANNUAL

CACTUS SHOW

February 20th to and
including February 27th, 1972

Sponsored by
The Phoenix Gazette and the
Desert Botanical Garden

Webster Auditorium
Desert Botanical Garden
Papago Park

entrances at
5800 E. Van Buren & 6400 E. McDowell
Phoenix, Arizona
Telephone 947-2800

SHOW OPEN DAILY 9 A.M. TO 5 P.M. — ADMISSION FREE

CLASSIFICATIONS

SECTION I **CACTI***

Class A. **POTTED** (Limited to 3 named entries per div.)

Div.
1. OPUNTIA
2. CEREUS
3. ECHINOCEREUS
4. REBUTIA
5. CHAMAECEREUS
6. LOBIVIA
7. ECHINOPSIS
8. ARIOCARPUS
9. STENOCACTUS
10. FEROCACTUS
11. ECHINOCACTUS
12. GYMNOCALYCIUM
13. ASTROPHYTUM
14. THELOCACTUS
15. ECHINOMASTUS
16. CORYPHANTHA
17. MAMMILLARIA
18. NOTOCACTUS
19. NEOPORTERIA
20. PARODIA
21. SEEDLINGS
22. TURBINOCARPUS
23. PEDIOCACTUS
24. Any other Species**

Class B. **CRESTED**

Div.
1. Crested Cacti — own root
2. Crested Cacti — grafted

Class C. **MONSTROSE**

Class D. **GRAFTED**

Class E. **COLLECTIONS** (5 different species of a genus)

SECTION II **SUCCULENTS OTHER THAN CACTI***

Class A. **POTTED** (Limited to 3 named entries per div.)

Div.
1. AEONIUM
2. AGAVE
3. ALOE
4. BRYOPHYLLUM
5. CRASSULA
6. DUDLEYA
7. ECHEVERIA
8. EUPHORBIA
9. GASTERIA
10. HAWORTHIA
11. KALANCHOE
12. LITHOPS
13. MESEMBRYANTHEMUM
14. PLEIOSPILOS
15. SEDUM
16. STAPELIA
17. YUCCA
18. BROMELIADS
19. SEEDLINGS
20. HOYA
21. Any other Species**

Class B. **COLLECTIONS** (5 different species of a genus)

*Grown by exhibitor at least 3 months.

**Additional Divisions will be set up when 3 or more species of a genus are entered.

SECTION III **DESERT TREES AND SHRUBS***

Class A. TREES
Class B. SHRUBS
Class C. DESERT BONSAI
Class D. SEEDLINGS
Class E. ANY OTHER DESERT PLANTS

SECTION IV **ARRANGEMENTS** (One entry per division in each class)***

Class A. **DISH GARDENS, planted** (Accessories permitted)
Div. 1. CACTI
2. OTHER SUCCULENTS
3. CACTI & OTHER SUCCULENTS
Class B. **TERRARIUM** (Cacti and/or other Succulents)
Class C. **CENTERPIECES** (Accessories permitted)
Div. 1. CACTI
2. OTHER SUCCULENTS
3. CACTI & OTHER SUCCULENTS
4. NATURAL, DRIED DESERT MATERIAL
5. MEXICAN THEME
6. AMERICAN INDIAN THEME
7. ANY OTHER

The above Divisions of Class C will apply to Classes D through H.

Class D. **ARRANGEMENTS on or AGAINST THE WALL** (Accessories permitted)***
Class E. **CORSAGES**
Class F. **BUTTON** (Arrangement on a button)
Class G. **MINIATURE ARRANGEMENTS** — under 5" high
Class H. **SMALL ARRANGEMENTS** — 5" to 8" high
Class J. **HANGING BASKETS**
Class K. **STRAWBERRY JARS**
Class L. **PATIO PLANTERS** (Cacti and/or Desert Plants)

SECTION V **ARTS** DESERT SUBJECTS (exhibitor's work)

Class A. **BLACK & WHITE PHOTOGRAPHS** (limit, 4)
Class B. **COLORED PHOTOGRAPHS** (limit, 4)
Div. 1. COLORED PRINTS
2. TRANSPARENCIES

***"Desert Spoons" prohibited. No artificial foliage or flowers permitted. No artificial coloring permitted.

SECTION V **ARTS** - continued:

Class C. **OIL PAINTINGS** (limit, 3 framed original entries)
Class D. **WATERCOLOR** (limit, 3 framed original entries)
Class E. **DRAWINGS** - ink, pencil, chalk
Class F. **ANY OTHER MEDIUM**
Class G. **NATURAL DESERT WOODS** (uncarved)

SECTION VI **EDUCATIONAL EXHIBITS**

SECTION VII **JUNIOR CLASS** (Elementary School students may enter in any of preceding classifications)

SECTION VIII **OPEN: NON-COMPETITIVE**

The Twenty-fifth Annual Cactus Show will be held in the Webster Auditorium, Desert Botanical Garden, February 20-27th, and is open to all persons wishing to enter Succulent Plants, Arrangements, Photographs (B. & W. or Colored), Paintings (desert subjects), or Desert Woods. No entry fee is charged.

All entries in Section V (Arts) must be entered by Wed., Feb. 16th, 5 P.M. All other entries can be entered from Thurs., Feb. 17th, 9 A.M., to Sat., Feb. 19th, 1 P.M.

Judging will be held at 3 P.M., February 19th.

Sweepstakes will be awarded for the most Blue Ribbons accumulated in the four large Sections; small trophies will be given for outstanding exhibits in the various Classes, ribbons for 1st, 2nd, 3rd, and Honorable Mention, if merited, in each classification.

Scale of points is as follows:

CACTI & SUCCULENT SPECIMEN PLANTS

Condition	45
Nomenclature	15
Rarity	10
Size or degree of maturity	10
Staging	20
	100

BUTTON, MINIATURES and SMALL

Scale	40
Design	30
Color Harmony	20
Condition	10
	100

ARRANGEMENTS and DISH GARDENS

Design	30
Color	20
Relationship	20
Originality	10
Distinction	10
Condition	10
	100

CORSAGES

Technique	15
Design	25
Color	15
Suitable combination of material	15
Distinction	20
Condition	10
	100

The "Handbook for Flower Shows," published by the National Council of State Garden Clubs, Inc., will be used as the basis of exhibiting, point scoring and judging of all Arrangements. Dish Gardens, Miniatures, etc. The Standard stystem of Judging will be used. The decision of the Judges will be final.

Exhibits may be removed only after 5 P.M., Sunday, Feb. 27th.

The Garden will take all due care and caution but will assume no responsibility for loss or breakage, or for unclaimed exhibits.

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SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI February 1972 No. 2

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James Cahill, Mrs. Geraldine Eliot, Mrs. Charles Gilliland, Mrs. Homer Lininger, Miss Eleanor B. Sloan, Donald W. Hutton

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Cover: The low growing Ball Clover — *Gomphrena caespitosa.*

Desert Botanical Garden of Arizona

STAFF

Director.....W. Hubert Earle
Botanist.....Dr. Howard S. Gentry
Horticulturist.....John H. Weber
Curator of the Herbarium.....J. Harry Lehr
Secretary .....Barbara Worbington
Bookstore .....Ann Shelstad
Maintenance and Bookstore.....Lynn Trainum
Maintenance and Bookstore.....Donald C. Shelstad
Student Horticulturists .....Rodney G. Engard, David Squire

Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

The HERBARIUM is about completed as this issue goes to press and should be ready for occupancy beginning Feb. 1st. It has been most satisfying to see the building rise, roof installed, adobe block being troweled, Spanish tile roofs completed, glass going into the windows, doors and iron gates being hung, heating-cooling unit hoisted to the roof and the cabinets installed within the herbarium. It is a delightful addition to our growing complex. Most important of all is that the building will be paid-for when completed.

Ever wonder where the FLOWER CHILDREN get the flowers that they sell at the busy intersections in the southern cities at this time of the year? The Horticultural Newsletter of the Southern Florist & Nurseryman magazine carries this note: "Flower Children vs. Florists — Scampel-Cott Enterprises of Dallas is headquarters for the flower children who sell carnations on the street corners of 60 American cities. Co-owner Tom Scott gives details in an interview quoted in SF&N's Fall Buyers Guide issue. The Annual overhead is $60,000 for licenses, taxes and legal fees plus another $32,000 for insurance premiums. Then there are commissions for the Flower Children, the usual social security and withholding payments, salaries for regional managers at 26 distribution centers, and the cost of 150,000 carnations daily".

DO YOUR PLANTS REACT TO YOUR EMOTIONS? is the title of a story in the same Newsletter and worth passing on to you. "Yes, plants do react to strong emotions according to experiments being conducted by Marcel J. Vogel, a research chemist, and John Meyers, M.D., of San Jose, Cal. These reactions are being recorded on a super sensitive Brush Recorder hooked up to a leaf.

Indications recorded on nearly three miles of graph paper show that not only is the plant sensitive to projected thoughts of damage to its own system but is also responsive to mutilation of shrubbery outside the windows of the laboratory. Light, music and prayer elicit responses, too, according to a story in the Fall Buyers Guide of the Southern Florist and Nurseryman.

REGISTRATION is urged now for those wishing to enroll in the FLOWER PRESERVATION classes to be given by Mrs. Jan Alsever, who conducted the exciting classes last spring. She needs to know how many will be registered so that the right amount of drying sand can now be ordered from Salt Lake City for flower preservation.

Classes begin March 27 and will be held April 2, April 17th and April 24th. Fees are $18.47 which includes a manual, sand and membership in the Garden. REGISTER NOW.

A new SELF-CONDUCTED NATURE WALK has been written to be used by our Visitors beginning Feb. 1st. It has been increased to 20 pages, will have 50 stations and 62 photographs many of which have been made by Fred Baselt who does excellent photographs for our Bulletin.

This is the first major change in the Nature Walk since 1960, when at that time the Visitors Building was opened. We note that much of its copy has been used by persons writing for magazines and newspapers in other states. We are most happy to extend this information to those seeking it.

The 25th ANNUAL CACTUS SHOW will be another large Garden activity Feb. 20th to Feb. 27th from 9-5 P.M. daily. Many inquiries are coming in daily and registration of exhibits should again be quite high.

We urge you to get your paintings, photographs, (all of desert subjects) ready and bring them into the Show not later than Wed., 5 P.M. Feb. 16th. Dish gardens, centerpieces, arrangements against the wall, cacti, succulents and other entries are due Sat., 1 P.M. Feb. 19th. Judging will begin Sat., 3 P.M.

Several of our dependable exhibitors have moved out of State which means that the rest of us will have to make extra efforts to again put on a good show. GET OUT YOUR ENTRIES.

PLAUDITS TO OUR GARDEN STAFF . . . Miss Betty Scholtz, a Curator and Fred McGourty, Jr. Editor of PLANTS & GARDENS, both staff members of the Brooklyn Botanical Garden spent some time with us during the Christmas season. In a letter of appreciation from the latter he said, "I might mention that your Garden is doing one of the best jobs of interpretation for the general public I have seen in the country. It clearly has a special vitality . . . ".

It is with pleasure I pass these compliments on to all you members.

Desert Trees and Shrubs

WAIT-A-MINUTE BUSH

Mimosa biuncifera Benth.

Leguminosae
Pea Family

Mimosa biuncifera is a straggly shrub extending irregularly with upright branches. It ranges in height from 0.6 to 2.4 meters (2 to 8 ft.) and often almost as wide. The branches and angled twigs are heavily armed with stout prickles, paired or solitary at the nodes. These are recurved at the apex and broad and flat at the base. The prickles are 5 to 8 mm. in length and are yellow or pale brown in color. The leaves are bipinnate, with 4 to 7 pair of pinnae (primary leaflets) that are 5 to 15 mm. long. Secondary leaflets number 5 to 13 pair and measure 2 to 4 mm. long and 0.5 mm. wide. These are linear-oblong in shape and pubescent with fine hair. Flowering is of a long period, May through August. The small, white and pink, individual flowers are clustered in globose

heads, 15 mm. (3-5 inch) in diameter. The corolla and brownish calyx are both pubescent with fine hair. There are ten or fewer stamens with white filaments and pale yellow anthers. Fruit consists of numerous linear-oblong pods, 3 to 4 cm. long, and to 5 mm. broad. These have marginal prickles along one edge and are brown to reddish-brown in color. There are from four to seven smooth, dark brown seeds in a pod. They are oblong-ovate and quite small, measuring only 3 to 4 mm. in length and to 2 mm. in width.

Mimosa biuncifera has an extensive distribution ranging from west Texas into southern New Mexico and Arizona and south into Sonora and Chihuahua, Mexico. In Arizona it is found in ten of the fourteen counties, extending in a southeasterly direction from near Kingman in Mohave county to the southeastern corner in Cochise county. It ranges below the Mogollon Rim at elevations from 915 to 1830 meters (3,000 to 6,000 ft.). It is also found in Yavapai, Maricopa, Gila, Pinal, Pima, Santa Cruz, Navajo, and Graham counties. Wait-a-minute Bush often grows in dense impenetrable thickets in canyons and desert arroyos and on dry rocky hillsides and mesas. It is common in the desert grassland and chaparral belts and also extends into the lower Oak-woodland zone.

Propagation by seed requires pretreatment due to the presence of an impervious seed coat. The seed, being quite small, is difficult to scarify by hand, so soaking 24 hrs. in hot water or immersing in acid for a short period are more feasible methods of treatment. Germination rate is high and growth rate is moderate.

Mimosa biuncifera requires full sun exposure for normal growth and a dry or well-drained site. It has wide tolerance to soil type, but in heavy soils it must be watered sparingly. Adequate space is needed so that physical contact is not made with the plant.

Clustered fruit of *Mimosa biuncifera.*

Wait-a-minute Bush by its very name indicates the vexatious nature of this species. While showy in flower, it is one of the most wretched plants to be tangled up in and consequently is not at all desirable as an ornamental.

REFERENCES:

Benson & Darrow, Trees and Shrubs of the Southwestern Deserts.
Kearney & Peebles, Arizona Flora.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.

——JHW

Arizona Wildflower

BALL CLOVER

Gomphrena caespitosa

Amaranthaceae
Amaranth Family

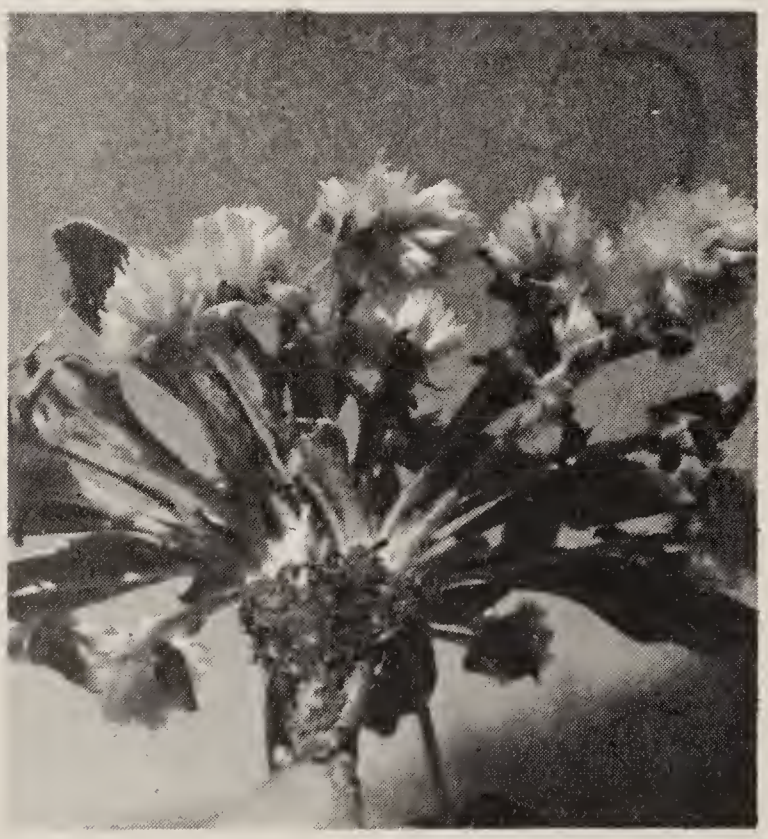
Delicate ball flowers of *Gomphrena caespitosa.*

Not a true clover, this species of Gomphrena gets its common name from the clover-like shape of the flowering head.

The Amaranth Family consists for the most part of homely, weedy plants but it also includes garden ornamentals such as cockscomb, prince's feather and love-lies-bleeding as well as this pretty wildflower.

From a deep thick woody taproot, this little perennial puts out many short stems, and broad basal leaves. The whole plant is white with long hairs.

The flowers grow in dense heads on stems no taller than six inches. "**Caespitosa**" means "growing in tufts", and this accurately describes the crowded diminutive flowers with their conspicuous white thin bracts which together form the ball-shaped heads. Flowers have a five-parted calyx and five stamens. A magnifying glass is necessary to examine the true flowers hidden among the bracts. Flowering is from April to August.



G. caespitosa is relatively common, enough so that it is listed among the plants eaten regularly by cattle. It grows on dry plains and slopes, usually with or near grasses.

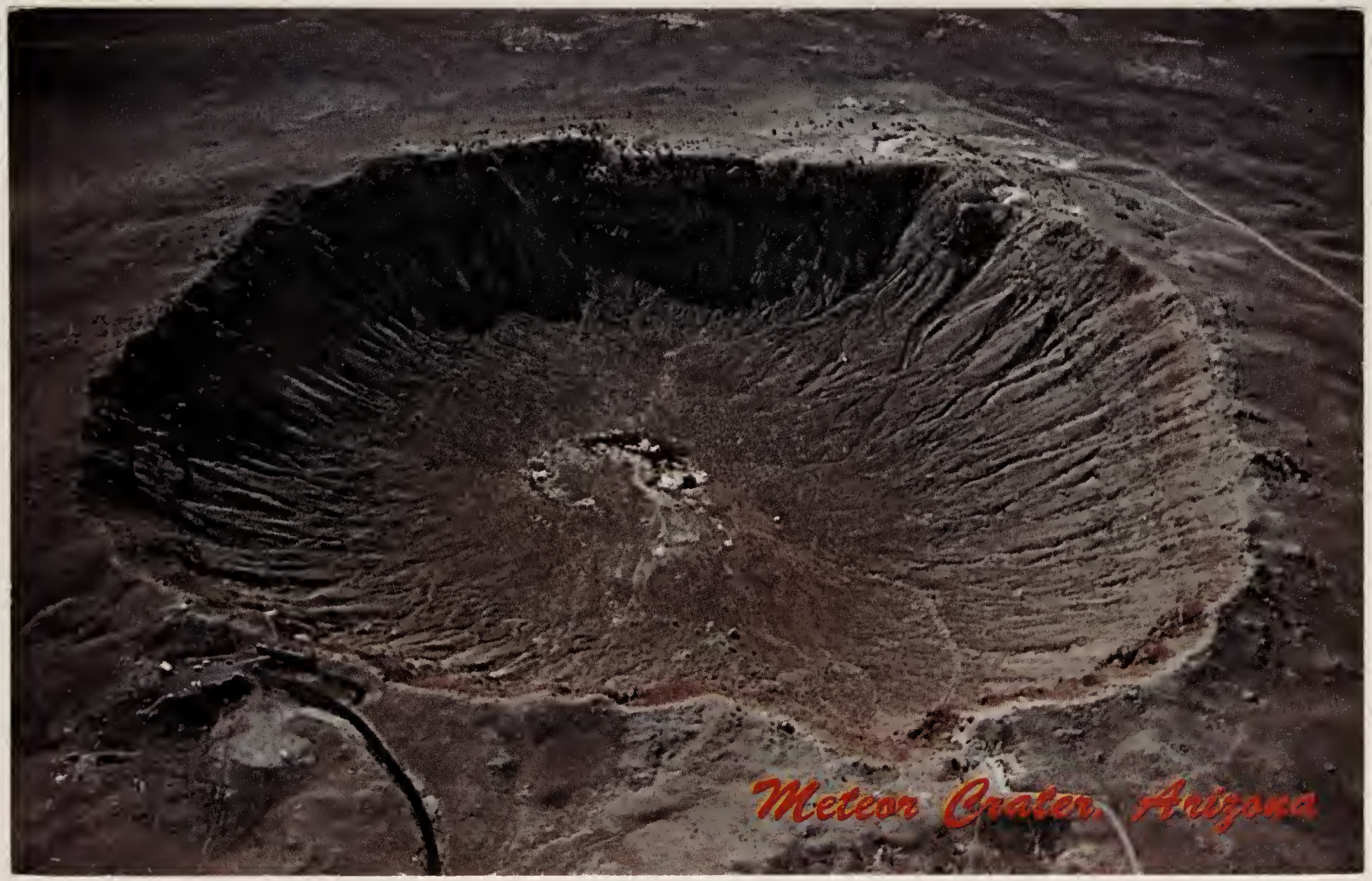
Distribution: New Mexico, Arizona and northern Mexico (states of Sonora and Chihuahua). In Arizona, Coconino County to Greenless, Cochise, Santa Cruz and Pima counties at elevations of 3500-5000 ft.

REFERENCES

Dayton, Notes on Western Range Forbs.
Kearney & Peebles, Arizona Flora.
Rickett, Wild Flowers of the United States, Vol. IV.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.

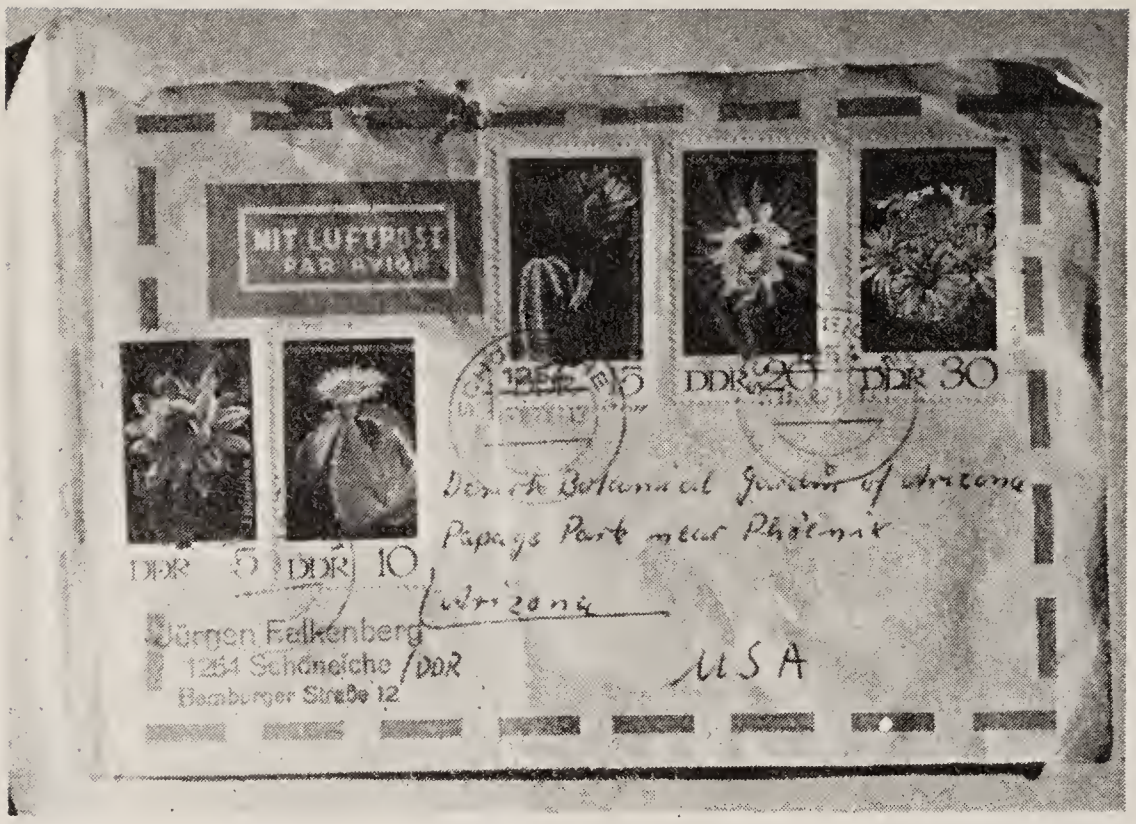
——LD

ASPECTS OF THE DESERT



Because it is in the dry desert, Arizona's meteor crater is much better preserved than any other known crater. It is certainly more accessible. Near the Winslow-Flagstaff section of Route 66, it is 570 feet deep, more than 4000 feet across, and almost perfectly round.

CACTUS BY POST



Some of the South American countries have issued postage stamps with pictures of native cacti, and the U.S. Post Office in 1962 issued a stamp carrying a saguaro cactus. It commemorated Arizona's becoming a state fifty years previously.

To our surprise, the handsomest postage stamps of recent years illustrating cacti have come from the other side of the Atlantic. The German Democratic Republic (East Germany) has issued a series of six full-color stamps, each depicting a different genus of cactus. A letter received at the Garden recently (see above) carried five of these beautiful stamps, and we have photographed and enlarged them for your pleasure. At left is pink-flowered **Mammillaria boolii** (more about this plant later); at the top of the next page, reading from left to right are a lavender-to-purple Epiphyllum hybrid, a white **Selenicereus grandiflorus**, and a brick-red **Echinocereus salm-dyckianus**; lower right a yellow-flowered Bishop's Cap, **Astrophytum myriostigma**. The sixth stamp in the series, not shown, is **Hamatocactus setispinus**.

Dr. Walther Haage, of Erfurt, Germany, supervised the printing of these stamps from his own color slides. Dr. Haage is well known for his books on the cultivation of cactus. Writing about these stamps for the British National Cactus and Succulent Journal, he remarks that they seem to indicate that cactophiles are finally being recognized as serious hobbyists, and their hobby is now in the "accepted" category, thank goodness.

Of particular interest to Desert Botanical Garden friends is the 20-pfennig stamp of **Mammillaria boolii**, for its specific name honors its discoverer, the late Herbert W. Bool of Phoenix, one of the founders of the Garden. (Mrs. Bool is Secretary of the Garden's Executive Board.)

Dr. George Lindsay, the first director of the Desert Botanical Garden described the plant in the Cactus and Succulent Journal (U.S.) in the March-April issue of 1953. He named it for Mr. Bool who was his companion on many cactus-hunting expeditions, and who found it on one such trip to Baja California in 1947. This is one of the

smallest Mammillarias, less than 1½ inches high, and about an inch in diameter. The lavender-pink flowers are almost an inch across. Some of the first-found specimens of the plant were deposited at the Desert Botanical Garden.

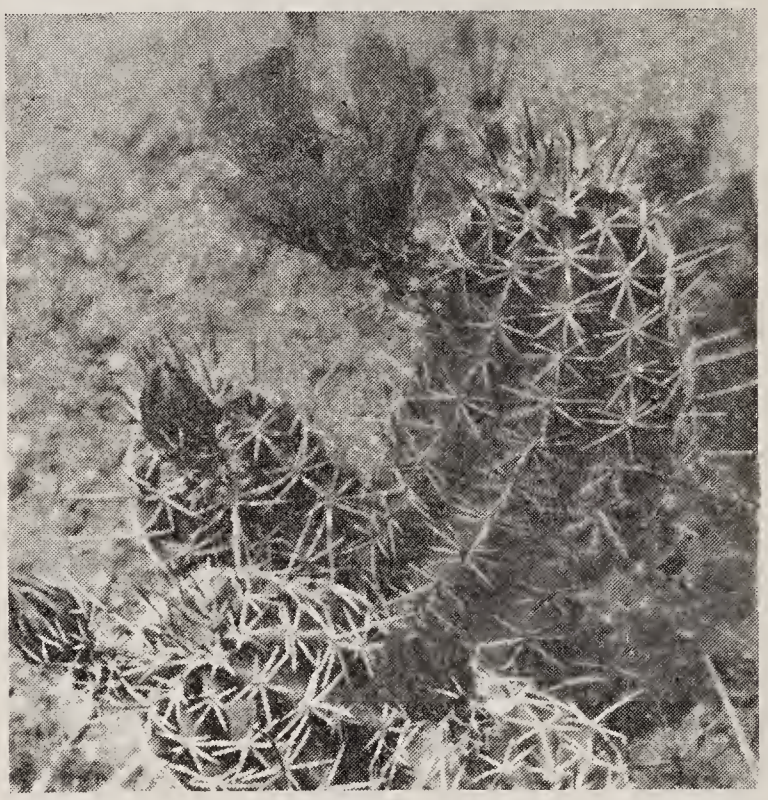
This tiny "mam" is one of the prettiest, but also one of the hardest to grow—probable reasons for Dr. Haage's choice as one of the six for the stamps. It is found in very few collections, and the demand for seed is great, since it is on the "must" list of serious cactus growers all over the world.

Arizona Cactus

FENDLER'S NEEDLE HEDGEHOG

Echinocereus fendleri var. rectispinus

Cactaceae



When you travel through the desert you become accustomed to seeing single and clustered hedgehogs, rather camouflaged by a dense covering of spines that all but obscure the plant stem. Suddenly you become aware of a bright, clean looking hedgehog different from the others. It is Fendler's Needle Hedgehog, having only a few short spreading spines and one gray central spine one and a half inches long. The relative scarcity of spines reveals the lovely dark green color of the large stems, which may be solitary or up to five in a cluster, each stem four to ten inches tall.

The stout gray central spine is tipped with brown or black and is at right angles to the firm (but sometimes flabby) stem.

Eight to ten radial spines nearly a half-inch long spread out straight and flattened against the stem, giving the effect of a star at the areole.

Flowers, two to two-and-a-half inches in diameter, are magenta to purple and rise out of the ribs directly above the spine cluster. Blooms appear in early May and remain open for several days in the higher elevations. Fruit is one and a quarter inches long, ovoid, green turning red when ripe. Pith is white and the seeds are black, one-sixteenth of an inch long.

The plant was described by R. Peebles in Wash. Acad. Science Journal 1938. Benson set it up as **Echinocereus fendleri** var **rectispinus** in 1944 and has carried it under the same entity in his recent Cacti of Arizona, 3rd Edition revised.

The plant is found in the grass, on sandy gravelly soil and on rocky desert slopes in eastern Pinal County and eastern Pima County eastward to the upper Gila Valley and parts of Cochise County in Arizona, and southward into Sonora, Mexico, from 4000-5000 ft. elevation.

Type locality: Santa Cruz County, Ariz.

Distribution: The southeast corner of Arizona.

REFERENCES:

Benson, Cacti of Arizona.
Earle, Cacti of the Southwest.
Kearney & Peebles, Arizona Flora.
Stockwell & Breazeale, Cacti of Arizona, U. of A. Biological Science Bulletin No. 1.

——WHE

Mexican Cactus

ERECT PINCUSHION
Coryphantha erecta

Cactaceae

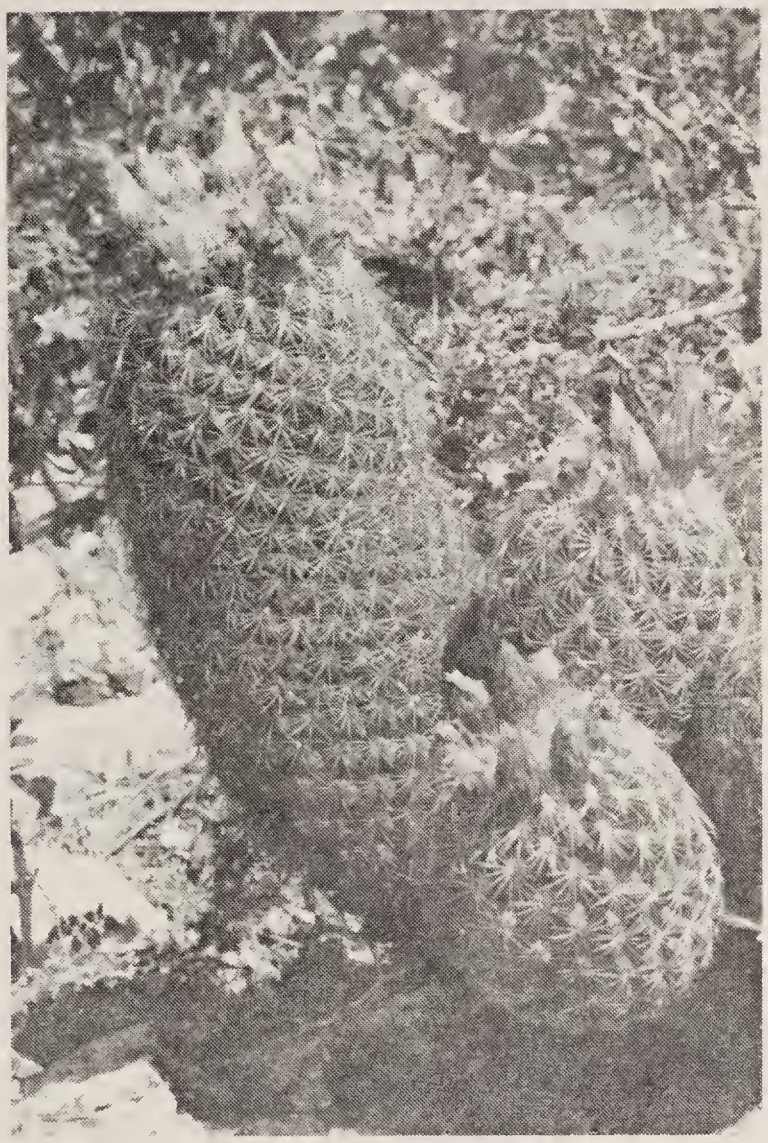
Coryphantha (from the Greek "top" and "flower") refers to the fact that the flowers appear at the apex of the plant. These are tubercled plants, the nipples bearing a groove on the upper face, from the base of which flowers and fruits emerge.

Most of the Coryphanthas are globular to cylindrical, and solitary, so it is with interest one finds a cespitose Coryphantha growing in clumps three feet across, with yellowish-green stems eight to twelve inches tall.

Conspicuous white wool fills the axils of the tubercles. There are two central spines, shorter than the radials, on the end of each tubercle, the upper central short, the lower longer and curved. Behind these are the eight to fourteen spreading radials, each a half inch long.

Flowers are three-quarters of an inch wide and long, yellow edged with light brown, and bloom in May. In cultivation flowers may appear as early as April or as late as July. This plant lends itself well to cultivation, but requires low, wide pots because of its cespitose habit of growth. Stems may be separated, cured, and rooted quite easily. This is a plant that needs a lot of space for expansion. Here in the desert it should be planted outdoors under light shade.

Lemaire in 1837 named the plant **Mammillaria erecta** because of its erect habit of growth. Berger in 1849 called it **M. ceratocentra.** Poselger in 1853 classified it as **Echinocactus erectus.** In 1891 Kuntz first decided that **Cactus erectus** was the right name, then later the same year settled on **Cactus ceratocentrus.**



Coryphantha erecta in bud.

In 1869 Lemaire proposed the genus Coryphantha for all of those plants having a groove on the upper side of the nipple, but did not designate a type. Engelmann first used the name as a sub-genus of Mammillaria.

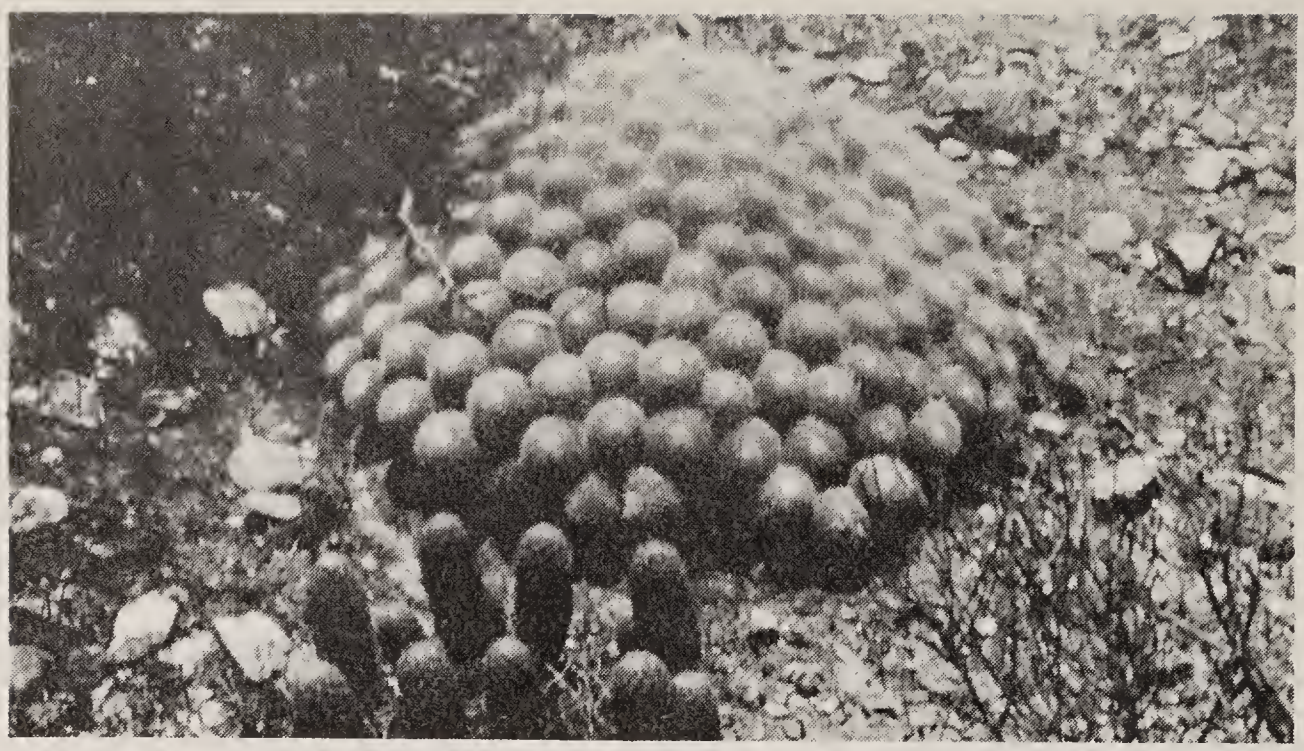
The fruits of **C. erecta** are greenish, thin-skinned and filled with a juicy green pith in which the brown seeds are suspended. Fruits are three-quarters to one inch long, ovoid to oblong, and quite swollen, with the perianth persisting.

Type locality: Mexico.
Distribution: State of Hidalgo.

REFERENCES

Britton & Rose, Cactaceae.

——WHE



A mounded *Mam. geminispina* growing along with a *Cory. erecta* in the Barranca de Venados, Mex.

GARDEN ACTIVITIES

FEBRUARY

Tues.	**1st**	CACTOMANIACS — "Arizona Native Plants Law", R. A. Countryman, Chief of Division of Compliance, Arizona Agriculture Commission	**8:00 P.M.**
Wed.	**2nd**	CLASSES — Cultivation of Trees and Shrubs	**3 & 8 P.M.**
Thurs.	**3rd**	LECTURE — Arizona Wildflowers	**3:00 P.M.**
Wed.	**9th**	CLASS (afternoon) FIELD TRIP — Pinnacle Peak	**8:30 A.M.**
Thurs.	**10th**	LECTURE — Arizona Trees	**3:00 P.M.**
Sat.	**12th**	CLASS (evening) FIELD TRIP — Pinacle Peak	**8:30 A.M.**
Wed.	**16th**	ART ENTRIES DUE FOR CACTUS SHOW	**before 5:00 P.M.**
Sat.	**19th**	ALL OTHER ENTRIES DUE FOR CACTUS SHOW	**before 1:00 P.M.**
Sun. 20th thru Sun. 27th		25th ANNUAL CACTUS SHOW	**daily 9-5 P.M**
Tues.	**29th**	PHOENIX BONSAI SOCIETY — Collecting Bonsai (slides)	**7:30 P.M.**

MARCH

Thurs.	**2nd**	LECTURE — Arizona Birds	**3:00 P.M.**
Tues.	**7th**	CACTOMANIACS — "Boyce Thompson Arboretum", R. T. McKittrick, Supt.	**8:00 P.M.**
Wed.	**8th**	CLASSES — Deserts and Their Plants	**3 & 8 P.M.**
Thurs.	**9th**	LECTURE — Arizona Scenics	**3:00 P.M.**
Sat.	**11th**	PHOENIX BONSAI SOCIETY — Field Trip Pinal Ranch	
Wed.	**15th**	CLASSES — Succulent Plants	**3 & 8 P.M.**
Thurs.	**16th**	LECTURE — Collecting in Mexico	**3:00 P.M.**
Wed.	**22nd**	CLASSES — Culture of Succulent Plants	**3 & 8 P.M.**
Thurs.	**23rd**	LECTURE — Arizona Cacti	**3:00 P.M.**
Mon.	**27th**	CLASSES IN FLOWER PRESERVATION	**1 & 7 P.M.**
Tues.	**28th**	PHOENIX BONSAI SOCIETY — How to Show Trees (slides)	**7:30 P.M.**
Wed.	**29th**	CLASSES — Desert Trees and Shrubs	**3 & 8 P.M.**
Thurs.	**30th**	LECTURE — Arizona Wildflowers	**3:00 P.M.**

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI MARCH, 1972 No. 3

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXVI MARCH, 1972 No. 3

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Desert Botanical Garden of Arizona

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REPORT OF THE 25th ANNUAL CACTUS SHOW

"It's beautiful", "Been here for about ten years and this is the best", "So many different desert ideas are on display", "The plants and dish gardens are so different from each other", "This is the 3rd time I've seen this show — I keep bringing my friends". These were only a few of the remarks overheard that in themselves depicted the Show.

"Tourist weather" each day increased the attendance along with the fine coverage by co-sponsor Phoenix-Gazette and its morning paper the Arizona Republic. Many persons remarked about the fine publicity of the Phoenix papers plus that of the Scottsdale Progress, Tempe Daily News, Mesa Tribune and other papers in the valley.

Exhibitors were quite happy with the awards judges Miss Virginia Martin, Arcadia, Calif. and Mrs. V. Doney of Monrovia, Calif. who placed the awards amongst the large number of entries in the CACTI AND LEAF SUCCULENTS. DISH GARDENS & ARRANGEMENTS were judged by a team of Phoenix Garden Club members — Mrs. R. S. Stevens, Mrs. G. G. Williams and Mrs. Love Morris. PAINTINGS AND ART awards were placed by Mr. & Mrs. Salvatore Macri. PHOTOGRAPHY was taken care of by Phoenix professionals Mr. & Mrs. Herb McLaughlin. We are most indebted to all the judges who took the time to award the ribbons and trophies to the exhibitors.

Mr. & Mrs. Alan Blackburn well deserved their trophies for all the excellent plants they brought from Tucson. Another member of the Tucson Cactus & Botanical Club, Betty Clark, brought about 90 plants. Another member, John Robbins, now residing at Sierra Vista, Arizona drove over 400 miles round trip to bring his interesting plants.

Barbara and Sandra Hovatter, living 42 miles southwest of Salome, Arizona, find great beauty which they bring to the Show.

There were 135 exhibitors showing 943 exhibits or an increase of 30 per cent over last year. Exhibitors that helped make the Show a success but were not shown in the awards were: Doreen Armstrong, Margaret Axtell, Connie Bagal, B. Bowen, George Bria, Mabel Cahill, Alma Cairo, S. M. Campbell, Mrs. Joe Carson, Anne Christensen, Dorothy

A "Cutie" admiring our spring beauties of African Daisies *Dimorphotheca aurantiaca*. Photo by Fred Baselt

Dannis, Lu Jo Don, Rosemary Equizii, Frances Scott, Freda Glaze, Georgia Gassett, Leah Hoyt, Mrs. Ruby Jennings, Janet Kinnas, Edward C. Klotz, Mrs. Wm. Knight, Rev. L. T. Knotter, John Lee, Bill Manderfield, John Matthes, Lorraine Matthes, Ann McGill, Ruth McNeill, Mrs. Richard Mount, Dennis Nelson, Dawn Penberthy, Marcia Raymond, Helen Sands, Nettie Scott, Roberta Servem, Isabelle Strandbery, Loren Van Zil, Marion Werder, Vivian Williams and Max Wollenman.

All the revenue producing departments showed healthy increases of 30 to 50 per cent. "Plants Outside" showed a 60 per cent increase due to all the plants donated by Agnes Holst, Isabelle Holt, Mrs. W. H. Earle, Mrs. Lela Turner, Mrs. C. Crandle, Mrs. Phil. Hennessey and two anonymous donors. Our thanks for all their generosity.

Many visitors wonder how we are able to present this large Cactus Show with such a small staff but it is bolstered by many who volunteer ½ to 3 days of their time who were Fred Baselt who made many of the photos in this issue, Lois Becker, Marie Brinkama, Devin Broderick, Mary Buckingham, Margaret Caldwell, Ellen Cargile, Ann Carter, Warner Dodd, Genevieve Evans, Beth & Kent Farley, Muriel Freeman, Helen Friedrichs, Florentine Gebert, Marie and Dr. Howard Gentry, Eleanor and Carl Groschke, Margaret Hasse, Glenda Handly, Phil & Frank Hennessey, Isabelle Holt, Mildred Hunt, Meta Jadamowitz, Douglas Johnson, Ruth Joritz, Evelyn & Jack Kerwin, Jim Larkin, Nancy Laska, Ruth Minter, Ruby & Paul Neumann, Jeleste and Ernest Norden, Genevieve Oppen, Dottie O'Rourke, Alice Owen, Henrietta Peterson, Dorothy Reiff, Betty & Ed Schrieber, Joy Lee Schroeder, Ida and Arthur Siegler, Mrs. F. C. Stiles, Peggy and Frank Stryke, Dave Sundstrom, Ruth and Earle Toye, Lela Turner and Demetrios Vlachos.

This year the volunteers and the staff were treated to delicious sandwiches, cake, cookies and coffee by Thelma McDougall and her assistants daily during the week who were Joy Lee Schroeder, Virginia Fraser, Lela Turner, Marie Gentry, Mildred Hunt, Betty Schrieber, Phil Hennessy and Helen Friedrichs. Everyone was heartily in favor of this procedure for next year. Again all our thanks for jobs well done.

TWENTY-FIFTH ANNUAL
CACTUS SHOW AWARD WINNERS

SWEEPSTAKES AWARDS

CACTI: Alan Blackburn, Tucson, Arizona
LEAF SUCCULENTS: James Robbins, Sierra Vista, Arizona
ARRANGEMENTS: Valerie Nelson, Scottsdale, Arizona
ARTS: Barbara Hovatter, Salome, Arizona

TROPHY WINNERS

MAMMILLARIA AND BEST CACTUS: Alan Blackburn, Tucson, Arizona
CRESTED CACTUS: Robert Moulis, Phoenix, Arizona
COLLECTION OF 5 CACTI: Mrs. Phil Hennessey, Phoenix, Arizona
LEAF SUCCULENT: James Robbins, Sierra Vista, Arizona
KALANCHOE: Mrs. Russell Slingerland, Scottsdale, Arizona
AEONIUM: Eva Vichules, Tempe, Arizona
DISH GARDEN: Fran Tolleson, Phoenix, Arizona
CENTERPIECE: Valerie Nelson, Scottsdale, Arizona
ARRANGEMENT AGAINST THE WALL: Mrs. Ted Chambers, Apache Junction, AZ

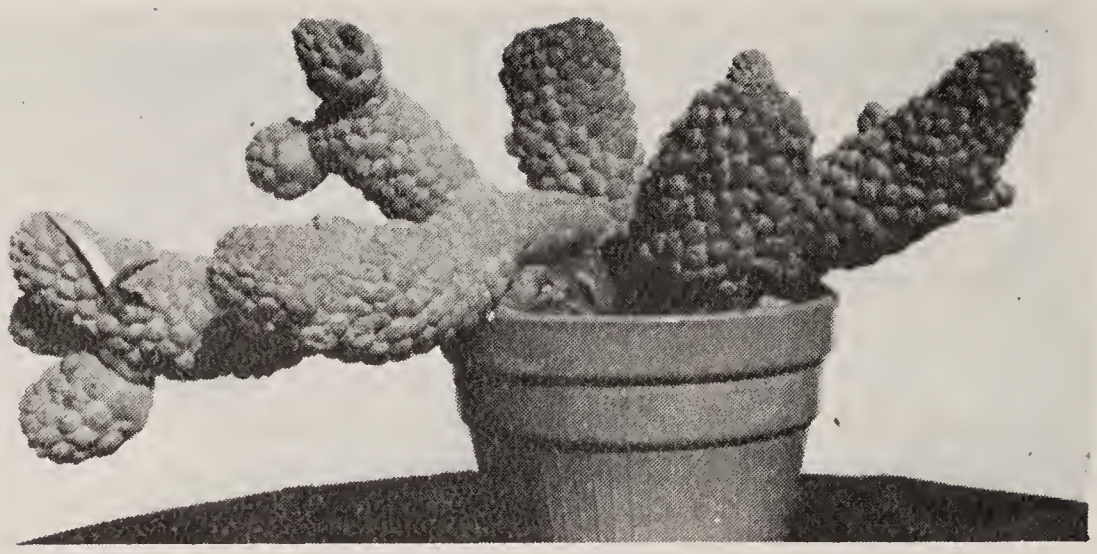
TERRARIUM: Fran Tolleson, Phoenix, Arizona
EDUCATIONAL: Lowell Elementary School, Phoenix, Arizona
DESERT WOODS: Mrs. C. L. Thomson, Tempe, Arizona
BLACK AND WHITE PHOTO: Dick Raymond, Phoenix, Arizona
TRANSPARENCY: Robert Shervem, Scottsdale, Arizona
OIL PAINTING: Max Wollenman, Phoenix, Arizona
WATERCOLOR: Virginia Boeger, Phoenix, Arizona
DRAWING: Rena Norviel, Phoenix, Arizona
JUNIOR ENTRY: Washington Garden Club Juniors, Phoenix, Arizona
BUTTON: Mrs. Ted Chambers, Apache Junction, Arizona
COMMERCIAL: Evans Cactus Garden, Phoenix, Arizona

RIBBON AWARD WINNERS

SECTION I, CACTI. CLASS A, POTTED PLANTS

1. OPUNTIA. 1st, Alan Blackburn. 2nd, Nancy Clarke. 3rd, Fran Tolleson. 4th, Douglas Johnson.
2. CEREUS. 1st and 2nd, Nancy Clarke. 3rd, Alan Blackburn.
3. ECHINOCEREUS. 1st and 2nd, Alan Blackburn. 3rd, Robt. Moulis. 4th, L. Bremer.
4. REBUTIA. 1st, Alan Blackburn. 2nd, Mrs. Phil. Hennessey. 3rd, Nancy Clarke.
5. CHAMAECEREUS. 1st, Alan Blackburn.
6. LOBIVIA. 1st and 3rd, Alan Blackburn. 2nd, Betty Blackburn.
7. ECHINOPSIS. 1st, Alan Blackburn. 2nd, L. Bremer.
8. ARIOCARPUS. 1st and 3rd, Robert Moulis. 2nd, Nancy Clarke. 4th, Alan Blackburn.
9. STENOCACTUS. 1st, 3rd, and 4th, Alan Blackburn. 2nd, Nancy Clarke.
10. FEROCACTUS. 1st and 3rd, Alan Blackburn. 2nd, Nancy Clarke. 4th, L. Bremer.
11. ECHINOCACTUS. 1st, L. Bremer. 2nd, Alan Blackburn. 3rd, Nancy Clarke.
12. GYMNOCALYCIUM. 1st, Alan Blackburn. 2nd, Betty Blackburn. 3rd, John Robbins. 4th, Neville Jantz.
13. ASTROPHYTUM. 1st, Nancy Clarke. 2nd and 3rd, Robt. Moulis. 4th, Alan Blackburn.
14. THELOCACTUS. 1st and 2nd, Robt. Moulis. 3rd, L. Bremer. 4th, Alan Blackburn.
15. ECHINOMASTUS. 1st and 2nd, Robt. Moulis. 3rd, Alan Blackburn. 4th, Mrs. Phil. Hennessey.
16. CORYPHANTHA. 1st, Alan Blackburn. 2nd, L. Bremer. 3rd, Robt. Moulis. 4th, Betty Blackburn.

Best Cactus & Mammillaria in the Show about 20'' wide of *Mammillaria bombycina* by Alan Blackburn.



Best Succulent in the Show *Tricocaulia cactiforma* exhibited by James Robbins

17. MAMMILLARIA. 1st and 2nd, Alan Blackburn. 3rd, L. Bremer. 4th, Nancy Clarke.
18. NOTOCACTUS. 1st and 3rd, Alan Blackburn. 2nd and 4th, Betty Blackburn.
19. NEOPORTERIA. 1st, Genevieve Oppen. 2nd and 3rd, Nancy Clarke.
20. PARODIA. 1st, Betty Blackburn. 2nd, Alan Blackburn. 3rd, Nancy Clarke.
21 SEEDLINGS. 1st, Alan Blackburn. 2nd, Marcy Settle.
22. TURBINOCARPUS. 1st, Robt. Moulis. 2nd, L. Bremer. 3rd, Nancy Clarke.
23. PEDIOCACTUS. 1st and 2nd, Alan Blackburn. 3rd, Robt. Moulis. 4th, John Robbins.
24. ANY OTHER SPECIES. 1st, Robt. Moulis. 2nd, Genevieve Oppen. 3rd, Nancy Clarke. 4th, Emme Oscarson.
25. STROMBOCACTUS. 1st, Alan Blackburn.
26. MALACOCARPUS. No Awards.
27. DOLICHOTHELE. 1st and 2nd, Alan Blackburn.
28. HAAGEOCEREUS. 1st, 2nd and 3rd, Nancy Clarke.
29. CLEISTOCACTUS. 1st and 2nd, Nancy Clarke.
30. BORZICACTUS. 1st, Alan Blackburn.
31. FRAILEA. 1st, Alan Blackburn. 2nd and 3rd, John Robbins.
32. MATUCANA. 1st and 2nd, John Robbins.
33. COPIAPOA. No Awards.
34. GYMNOCACTUS. 1st, 2nd and 3rd, Robt. Moulis.
35. CEPHAL OCEREUS. 1st, Nancy Clarke. 2nd, Robt. Moulis. 3rd, Emma Oscarson.
36. ESPOSTOA. 1st and 2nd, Nancy Clarke.
37. THRIXANTHOCEREUS. 1st and 2nd, Nancy Clarke. 3rd, Alan Blackburn.

SECTION I, CACTI. CLASS B. CRESTED.

1. OWN ROOT. 1st and 4th, Emma Oscarson. 2nd and 3rd, Robt. Moulis.
2. GRAFTED. 1st and 2nd, Robt. Moulis. 3rd, Nancy Clarke.

CLASS C. MONSTROSE PLANTS.

1st, Alan Blackburn. 2nd, Nancy Clarke. 3rd, Neville Jantz.

CLASS D. GRAFTED PLANTS.

1st, 2nd and 3rd, Robert Moulis.

CLASS E. COLLECTIONS. (5 Different Species of a Genus).

1st, Mrs. Phil Hennessey. 2nd, Robt. Moulis. 3rd, Betty Blackburn. 4th, Mrs. Russell Slingerland.

An unusual crest of *Mammillaria dioica* by Bob Moulis.

'Spanish moss' *Tillandsia ionantha* in flower by Neville Jantz.

SECTION II. SUCCULENTS OTHER THAN CACTI. CLASS A, POTTED PLANTS.

1. AEONIUM. 1st and 3rd, Eva Vichules. 2nd and 4th, Nancy Clarke.
2. AGAVE. 1st, Alan Blackburn. 2nd, Nancy Clarke. 3rd, Mrs. Russell Slingerland.
3. ALOE. 1st, Robt. Moulis. 2nd, James Robbins. 3rd, Mrs. Russell Slingerland.
4. BRYOPHYLLUM. Judged with Kalanchoe.
5. CRASSULA. 1st, James Robbins. 2nd, Nancy Clarke. 3rd and 4th, Mrs. Russell Slingerland.
6. DUDLEYA. 1st, Alan Blackburn. 2nd, Isabelle Holt. 3rd, Valerie Nelson.
7. ECHEVERIA. 1st, Genevieve Oppen. 2nd and 3rd, Alan Blackburn.
8. EUPHORBIA. 1st and 4th, Alan Blackburn. 2nd, Nancy Clarke. 3rd, James Robbins.
9. GASTERIA. 1st and 2nd, James Robbins. 3rd, Nancy Clarke.
10. HAWORTHIA. 1st and 2nd, James Robbins. 3rd and 4th, Alan Blackburn.
11. KALANCHOE. 1st, Mrs. Russell Slingerland. 2nd, Alan Blackburn.
12. LITHOPS. 1st, 2nd and 3rd, James Robbins. 4th, Carl S. Simmons.
13. MESEMBRYANTHEMUM. 1st, 2nd and 3rd, James Robbins.
14. PLEIOSPILOS. 1st and 2nd, James Robbins.
15. SEDUM. 1st, Neville Jantz.
16. STAPELIA. 1st, 2nd and 3rd, Alan Blackburn.

16a. TRICHOCAULON. 1st and 2nd, James Robbins.

17. YUCCA. None.
18. BROMELIADS. 1st, Neville Jantz, 2nd, Mrs. Russell Slingerland. 3rd, James Robbins.
19. SEEDLINGS. None.
20. HOYA. 1st, Mrs. Sam Schlosser. 2nd, 3rd and 4th, Betty Blackburn.
21. ANY OTHER SPECIES. 1st and 2nd, Alan Blackburn. 3rd and 4th, James Robbins.
22. CONOPHYTUM. 1st, 3rd and 4th, James Robbins. 2nd, Carl Simmons.
23. FAUCARIA. 1st and 2nd, James Robbins.
24. CHEIRIDOPSIS. 1st and 2nd, James Robbins.
25. GLOTTIPHYLLUM. 1st, James Robbins. 2nd, Genevieve Oppen.
26. DINTERANTHUS. 1st, 2nd and 3rd, James Robbins.
27. ADROMISCHUS. 1st and 2nd, James Robbins. 3rd, Nancy Clarke.

28. ANACAMPSEROS. 1st, 2nd and 3rd, James Robbins.
29. OPTHALMOPHYLLUM. 1st, 2nd and 3rd, James Robbins.
30. SENECIO. 1st, Alan Blackburn. 2nd, Nancy Clarke.
31. CARALLUMA. 1st, James Robbins.

SECTION II. CLASS B. COLLECTIONS.
1st, James Robbins.
SECTION II. CLASS C. CRESTED SUCCULENT.
1. OWN ROOT. 1st, Nancy Clarke. 2nd, Genevieve Oppen.

SECTION III. DESERT TREES AND SHRUBS.
CLASS A. TREES. 1st, Nancy Clarke.
CLASS B. SHRUBS. 1st, Wm. F. Clark.
CLASS C. DESERT BONSAI. 1st and 2nd, Louis Knaak. 3rd, Neville Jantz. 4th, Mrs. F. M. Feffer.
CLASS D. SEEDLINGS. 1st, Alan Blackburn.
CLASS E. ANY OTHER DESERT PLANTS. 1st, James Robbins.

Bonsai exhibit of *Jatropha spathulata* by Louis Knaak.

SECTION IV. ARRANGEMENTS.
CLASS A. DISH GARDENS.
1. CACTI. 1st, Fran Tollenson. 2nd, Lillian Lugibihl. 3rd, Mrs. F. M. Feffer. 4th, Emma Oscarson.
2. OTHER SUCCULENTS. 1st, Isabelle Holt. 2nd, Fran Tolleson. 3rd, Bonnie Rodriguez. 4th, Lela Turner.
3. CACTI AND OTHER SUCCULENTS. 1st, Alan Blackburn. 2nd, Jacqueline Evans. 3rd, Isabelle Holt. 4th, Lela Turner.

CLASS B. TERRARIUM. 1st, Fran Tolleson. 2nd, Bryant-Twitchell. 3rd, Mrs. Russell Slingerland. 4th, Norma McDermitt.
CLASS C. CENTERPIECES.
1. CACTI. 1st, Valerie Nelson. 2nd, Lela Turner. 3rd, Judy Smith.
2. OTHER SUCCULENTS. 1st, Valerie Nelson. 3rd, Isabelle Holt.

3. CACTI AND OTHER SUCCULENTS. 1st, Lela Turner. 2nd, Isabelle Holt. 3rd, Judy Smith.
4. NATURAL DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Lillian Lugibihl. 3rd, Mrs. C. M. Schroeder.
5. MEXICAN THEME. 2nd, Dottie Battiest.
6 AMERICAN INDIAN THEME. 1st, Jacqueline Evans. 2nd, Isabelle Holt. 3rd, Valerie Nelson.
7. ANY OTHER. 1st, Mrs. Ted Chambers. 3rd, Isabelle Holt.

CLASS D. ARRANGEMENTS ON OR AGAINST WALL.

1. CACTI. 1st, Valerie Nelson. 2nd, Lela Turner. 3rd, Mrs. C. M. Schroeder. 4th, Dottie Battiest.
2. OTHER SUCCULENTS. 1st, Lela Turner.
3. CACTI AND OTHER SUCCULENTS. 1st, Valerie Nelson. 2nd, Lela Turner. 3rd, Dottie Battiest.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Valerie Nelson. 3rd, Lela Turner.
5. MEXICAN THEME. 1st, Valerie Nelson. 2nd, Lela Turner.
6. AMERICAN INDIAN THEME. 1st, Mrs. Ted Chambers. 2nd Valerie Nelson.
7. ANY OTHER. 1st, Mrs. Ted Chambers. 2nd, Isabelle Holt. 3rd, Mrs. Lee Cress.

CLASS E. CORSAGES.

1. CACTI. 3rd, Dorothy Battiest.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers.

Large crest of *Euphorbia lactea* by Nancy J. Clarke.

Dried arrangment with a Mexican theme by Mrs. R. I. Turner.

Echeveria pulvinata was one of the most attractive plants in the Show by Mrs. G. Oppen.

6. AMERICAN INDIAN THEME. 1st, Mrs. Ted Chambers.
7. ANY OTHER. 1st, Mrs. Ted Chambers.

CLASS F. BUTTON ARRANGEMENTS.

1. CACTI. 1st, Mrs. Ted Chambers. 2nd, Mary Nelson. 3rd, Bonnie Rodriguez.
3. CACTI AND OTHER SUCCULENTS. 1st, Valerie Nelson. 2nd, Bonnie Rodriguez.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Sandra Hovatter. 3rd, Valerie Nelson. 4th, Mary Nelson.
5. MEXICAN THEME. 2nd, Valerie Nelson. 2nd, Mrs. Ted Chambers.
6. AMERICAN INDIAN THEME. 1st, Mrs. Ted Chambers. 2nd Valerie Nelson.
7. ANY OTHER. 1st, Mrs. Ted Chambers. 3rd, Bonnie Rodriguez.

CLASS G. MINIATURE ARRANGEMENTS.

1. CACTI. 1st, Valerie Nelson. 3rd, Mrs. Ted Chambers.
2. OTHER SUCCULENTS. 1st, Valerie Nelson.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Valerie Nelson. 3rd, Sandra Hovatter. 4th, Mary Nelson.
5. MEXICAN THEME. 1st, Valerie Nelson.
6. AMERICAN INDIAN THEME. 1st, Valerie Nelson.
7. ANY OTHER. 1st, Mrs. Ted Chambers. 3rd, Valerie Nelson.

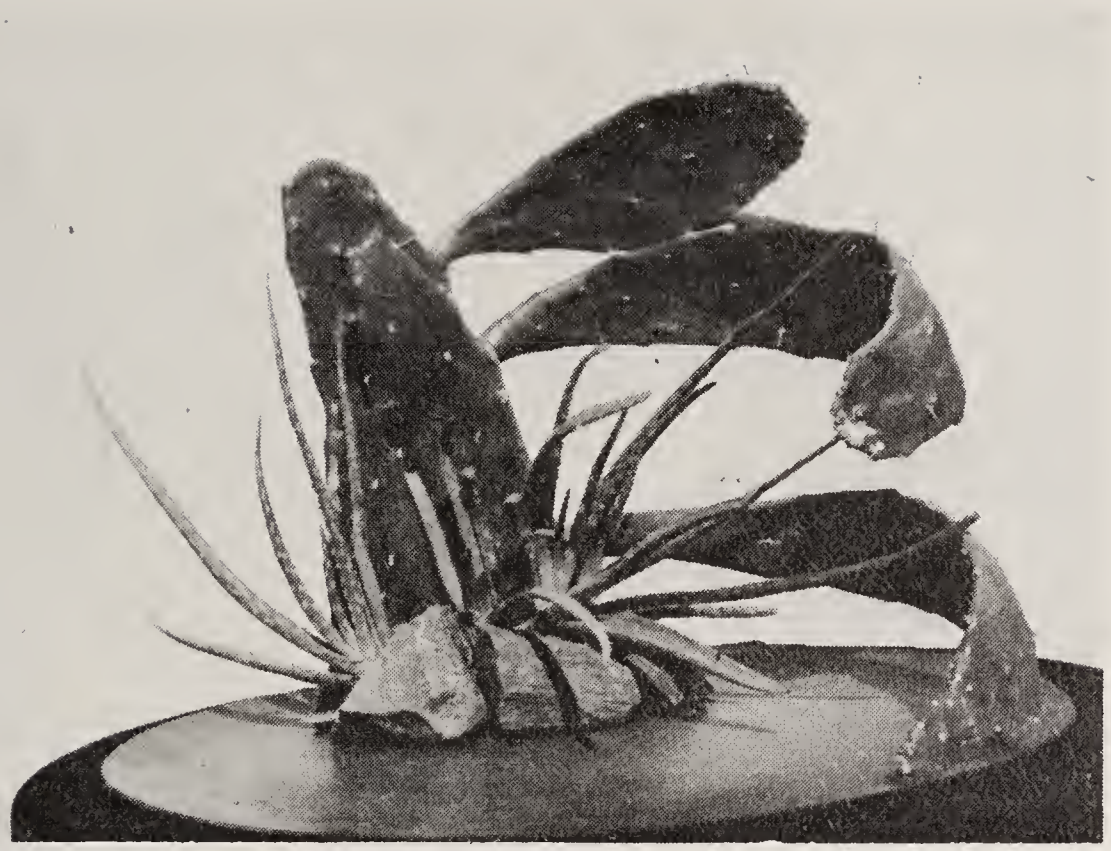
CLASS H. SMALL ARRANGEMENTS.

2. OTHER SUCCULENTS. 1st, Valerie Nelson. 3rd, Mrs. Ted Chambers.
3. CACTI AND OTHER SUCCULENTS. 1st, Valerie Nelson.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Valerie Nelson.
5. MEXICAN THEME. 1st, Valerie Nelson. 3rd, Mrs. Ted Chambers.
6. AMERICAN INDIAN THEME. 3rd, Mary Nelson.
7. ANY OTHER. 1st, Mrs. Ted Chambers. 3rd, Valerie Nelson.

CLASS J. HANGING BASKETS. 1st, Alan Blackburn. 2nd, Eva Vichules. 3rd, Nancy Clarke. 4th, Judy Smith.

CLASS K. STRAWBERRY JARS. 1st, Valerie Nelson. 3rd, Fran Tolleson.

CLASS L. PATIO PLANTERS. 1st, Alan Blackburn. 2nd, James Robbins. 3rd, Dottie Battiest.



A striking arrangement of Cacti and Succulents by Mrs. Valerie J. Nelson.

SECTION V. ARTS (DESERT SUBJECTS)
CLASS A. BLACK AND WHITE PHOTOGRAPHY.
FLOWERS: 1st, Dick Raymond. 1nd and 3rd, Agnes M. Holst.
PLANTS: 1st, Walter J. Groll Sr. 2nd and 3rd, Bill Woodward.
LANDSCAPES: 1st, 2nd and 3rd, Hobart Pribbenow.
DESIGN: 1st and 2nd, Agnes M. Holst.
FAUNA: 1st, John Walter. 2nd and 3rd, Sandra Hovatter.
CLASS B. COLOR PHOTOGRAPHY.
1. COLOR PRINTS.
FLOWERS: 1st, Dick Raymond.
SUNSETS: 1st, Patricia Rodgers. 2nd and 3rd, Walter J. Groll, Sr.
2. TRANSPARENCIES.
FLOWERS: 1st and 4th, Eva M. Latham. 2nd, Agnes M. Holst. 3rd, Jo Houdek.
PLANTS: 1st and 3rd, Agnes M. Holst. 2nd, Genevieve Evans. 3rd, Walter J. Groll, Sr.
LANDSCAPES: 1st, Walter J. Groll, Sr. 2nd, Genevieve Evans. 4th, Jo Houdek.
FAUNA: 1st, 2nd, 3rd and 4th, Laurie Kriz.
FLOWERS: (3x5) 1st, Hobart Pribbenow. 2nd and 3rd, Robert M. Shervem.
LANDSCAPES: (3x5) 1st, Robert M. Shervem. 2nd, Hobart Pribbenow.
CLASS C. OIL PAINTINGS.
FLOWERS: 1st and 2nd, Max Wollenman. 3rd, Joyce Yost Lewis.
LANDSCAPES: 1st, Rena Norviel. 2nd, Mrs. Joseph Birchett. 3rd, Mrs. Ruby Jennings. 4th, G. T. Blake.
BIRDS: 1st, Louise Dawson. 2nd, G. T. Blake.
MINIATURE: 1st, Verna Rinsem.
CLASS D. WATERCOLOR. 1st, Virginia Boeger. 2nd, Barbara Hovatter. 3rd, Kenneth C. Balcomb. 4th, Isabelle Holt.
CLASS E. DRAWINGS.
1. PASTEL. 1st, Rena Norviel.
2. PENCIL OR INK. 1st and 3rd, Barbara Hovatter. 2nd, William Hookway.

CLASS F. ANY OTHER MEDIUM.

1. DRIED FLOWERS. 1st, Barbara Hovatter. 2nd, Mrs. Carl Groschke. 3rd, Valerie Nelson.
2. OTHER. 1st, Elaine Weisman. 2nd and 4th, Judy Smith. 3rd, Mary Ellen Thomas.

CLASS G. NATURAL DESERT WOODS.

1. LARGE. 1st, Mrs. C. L. Thomson. 2nd, Mrs. P. Hennessey. 3rd, Pat Kelley. 4th, Florentine Gebert.
2. MINIATURE. 1st, 2nd and 3rd, Barbara Hovatter.

SECTION VI. EDUCATIONAL EXHIBITS:

1st, Lowell Elementary. 2nd, Joseph Brick. 3rd, Sandra Hovatter.

SECTION VII. JUNIOR CLASS.

1st and 2nd, Heidi Dunn. Two 1st, 2nd and 3rd, Ted Hasson. 1st, Greg Biaer. 1st, Jennifer Biaer. 1st and 3rd, George Bria. 1st and 2nd, Stella Hasson. 4th, Dino Lewis. 1st, Raymond Leon. 3rd, Jim Penberthy. 1st and 2nd, Frank Perez. 3rd, Mike Perez. 1st, Rebecca Perez. 1st, Joseph Perez. 3rd, Johnny M. Pope. Two 1sts, Dirk Scotko. 2nd, Carl McDermitt. Two 1sts, Derek Robish. 2nd, Alex Lopez. 1st, Frank Salaiz. 1st and 2nd, Eric Anderson. 3rd, Kimberly Norling. Two 1sts, Two 2nds and 3rd, Robt. Scott. 3rd and Two 4ths Lee Scott. Two 1sts and 2nd, Pat Nelson. Two 1sts, Mark Nelson.

Your imagination makes these "Desert-woods" most interesting, entered by Mrs. Phil Hennessey.

GARDEN ACTIVITIES

MARCH

Thurs.	**9th**	LECTURE — Arizona Scenics	**3:00 P.M.**
Sat.	**11th**	PHOENIX BONSAI SOCIETY — Field Trip Pinal Ranch	
Wed.	**15th**	CLASS — Succulent Plants	**3:00 P.M.**
Thurs.	**16th**	LECTURE — Collecting in Mexico	**3:00 P.M.**
Wed.	**22nd**	CLASS — Culture of Succulent Plants	**3:00 P.M.**
Thurs.	**23rd**	LECTURE — Arizona Cacti	**3:00 P.M.**
Mon.	**27th**	CLASS IN FLOWER PRESERVATION	**1 & 7 P.M.**
Tues.	**28th**	PHOENIX BONSAI SOCIETY — How to Show Trees (slides)	**7:30 P.M.**
Wed.	**29th**	CLASS — Desert Trees and Shrubs	**3 P.M.**
Thurs.	**30th**	LECTURE — Arizona Wildflowers	**3:00 P.M.**

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI April, 1972 No. 4

REG MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

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Arizona Cactus and Native Flora Society

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COVER: Flower of *Sclerocactus polyancistrus*

Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

The Garden's Board of Directors, at their January meeting, concluded that it would be very fitting to dedicate the new herbarium to the memory of Lois Earle. They felt that this action would meet with the approval of our members, and especially those who, some time ago, contributed to the Lois Porter Earle Memorial Fund.

When the fund was established, suggestions for its eventual use were many, but no definite plans were made other than to use it for an improvement in the Garden. The Board, after conferring with a number of the donors, felt it would be suitable to use the fund (which has increased to about $3800 with interest) toward a more substantial and lasting project. This has been accomplished by the purchase of essential herbarium equipment, much needed to complete its usability.

I know that Lois would appreciate this guesture.

Dedication of the Herbarium will be on April 16th at 3 p.m. Do make an earnest effort to attend it.

The annual members' meeting will be held on May 7th here at the Garden. With your copy of this Bulletin is your ballot for the election of board members. Please fill it out and return it to the Garden before May 1st.

The Herbarium is now being used by Dr. Gentry and Mr. Lehr. We moved the cases and herbarium sheets from the Administration Building to their new location during the week prior to the Cactus Show, and then moved in the twenty new herbarium cases that had been stored since last October in the Archer House carport. Desks and other furniture have been moved in, and the new cases are being filled rapidly.

Wildflowers are having a hard time in our valley this spring, as almost no rain has fallen since November. (Usually we get about half our annual rainfall in the winter months.) On our field trips it is discouraging to see the lack of color. Oddly enough, the dry years that are so bad for other flowers are the best flowering years for hedgehog cacti. They bloom less profusely after well-watered winters.

Dr. Gentry's latest book, "Agaves of Sonora" will have been published by the time you read these notes. Publication date is March sixteenth. The book is the fruit of many years of field work and study by this eminent botanist. It goes without saying that this will be a welcome addition to any library. Look for more information about the book in our next issue of the Bulletin.

The Book Store has added some new books to its inventory. You'll enjoy adding to your library "Colorful Desert Wildflowers of California and Arizona" by Grace B. and Onas M. Ward. Now in its second edition, the book has 204 pages and contains 190 color illustrations. It is color-keyed — flowers are grouped by color, red, white, blue and yellow. Postpaid, $4.75 for the paperbound edition.

(Continued on next page)

Mexican Cactus

BUTTON CACTUS
Epithelantha micromeris
var. rufispina

Cactaceae

A dainty plant, and an easy one to handle. The short spines of this little cactus are appressed to its body and so do not puncture your hands.

This button cactus is found in abundance from Parras de la Fuente to south of Saltillo in the state of Coahuila, Mexico. It grows in the shelter of bushes and grasses and is a bit difficult to spot in its half-hidden location.

The appressed apex contains many reddish spines, while the rest of the spines on the body of the plant are white.

Flowers are white to pink, emerging from the wool at the apex. They are followed by edible red clavate fruits, referred to as "chilitos" or little chili peppers. Their taste is tart, however, and not peppery.

Dr. Helia Bravo first described this cactus in 1951 as **Epithelantha rufispina**. Backeberg in 1954 found it to be a variety of **E. micromeris** and called it **E. micromeris** var. **rufispina**.

This is a solitary plant, four inches tall, but at times has offsets at the base. It becomes quite dehydrated during drought, but fills out quickly after rains. It is an ideal plant for culture, as it is slow growing, seldom needs repotting, and will stand neglect better than many other small cacti.

Distribution: Mesas and rocky hillsides through the southern part of Coahuila, Mexico.

REFERENCES

Backeberg, Die Cactaceae
Bravo, Las Cactaceas de Mexico

—WHE

Button Cactus photographed 11 km South of Saltillo, Coahuila.

EDITOR'S NOTES (cont.)

Also, "Desert Plants for Desert Gardens", by Patricia Moorten and Rex Nevins. A good guide for California residents.

———

The Phoenix Bonsai Society will again hold its spring exhibit at the Garden Saturday and Sunday, April 22nd and 23rd in the Webster Auditorium, nine to five daily.

This is always a most attractive show, even for people who do not grow bonsai themselves. The dramatic shapes and the age of some of the exhibits are intriguing.

The art of bonsai is sweeping the nation. Bring your friends and visitors to this show that is on a par with shows in the larger cities.

———

The Spring Field Trip for the Wednesday afternoon class in Desert Plants will leave the Garden at 8:30 a.m. on Wednesday, April 12th, for Rackensack Creek, north of Carefree. All members of the Garden are invited to participate in this trip to an area not explored by previous classes. Bring lunch and beverage.

Arizona Wildflower

TOADFLAX
Linaria dalmatica

Scrophulariaceae
Figwort Family

Strictly speaking, this toadflax isn't an Arizona wildflower. It is an escaped garden plant that has adapted to the "wild" life. Munz calls such a plant a waif, which makes it sound like a pathetic little thing that can barely hold its own. This is hardly the case with **Linaria dalmatica**.

It joined the known flowers of Arizona only in the 1960 Supplement to Kearney & Peebles "Arizona Flora", where its distribution was given as the campus of what is now Northern Arizona University in Flagstaff. Since then it has spread at least to Skull Valley where these pictures were taken—seventy-five miles and many mountains away.

Nor is its appearance waiflike. It is a stout, erect perennial that forms clusters and grows as tall as three feet.

Both **L. dalmatica** and its more widespread cousin **L. vulgaris** (the Butter-and-Eggs plant) have their origin in the eastern Mediterranean, but while the smaller **L. vulgaris** is found throughout the continental United States, **L. dalmatica** turns up only in scattered locations of northern and western states; the south shores of all five Great Lakes, the state of Wisconsin, and then leapfrogging to the Northwest; a large area in Colorado, and small well-separated areas in Utah, Nevada, southern California and north-central Arizona.

The tall, stout stems have alternate leaves, ovate to ovate-lanceolate, with the lower leaves cordate-clasping. The handsome yellow flowers grow in terminal spikes. They are long, the corolla itself is up to an inch and three-quarters long exclusive of the half-inch to three-quarters-inch spur. The corolla is five-parted, with a two-lobed upper lip and a three-lobed lower lip. Where the lips nearly touch, the lower one is hairy.

These pictures were taken on May 25th, at an elevation of about one mile. Depending on elevation and exposure, **L. dalmatica** will be found in bloom from late May through early September.

References:
Kearney & Peebles, Arizona Flora, Supplement (1960)
Munz, A California Flora
USDA Handbook No. 366, Selected Weeds of the United States

——LD

The clear yellow flowers of Toadflax have noticeably long spurs.

Arizona Cactus

MANY-SPINED DEVIL'S CLAW

Sclerocactus polyancistrus

Cactaceae

This is a most attractive plant when you see it on the desert with the sun's rays dancing among the many-colored flattened spines.

The scientific name is as descriptive as the common name. **Sclero** means cruel, and **polyancistrus** means many-hooked. **Sclerocactus polyancistrus** is a small, globose plant, about six inches high, although under favorable conditions some plants have been found that are sixteen inches tall and five inches in diameter. It has 13 to 17 prominent ribs that are obscured by its dense armament of spines. The four to six central spines are porrect, hooked, and about three or four inches long. Fifteen to twenty flattened radial spines spread out around the centrals. They are red, brown, yellow and white, and are extremely colorful after a rain shower.

The two-inch flowers are nearly purple when they first open, turning to red the following days. On the high desert the flowers will open for several days, but at lower elevations, such as here at the Garden, they last only one day.

Fruit of this cactus is usually red and fleshy, later becoming dry and thin-walled, dehiscing its black seeds through a basal pore. It is almost impossible to remove the seed from the plant, since when you lift the dry fruit the seeds spill down the sides of the plant. An unorthodox method is to gently dig up the plant, upend it and remove the seed pods over a pan, and then replant.

This cactus does not colonize. Plants are sparingly spread over large areas, usually on mesas.

Englemann described it as **Echinocactus polyancistrus** in 1856 in Proceedings of the American Academy.

In cultivation **S. polyancistrus** needs light watering during the hot months.

Type locality: Head of the Mojave River, California.

Distribution: High deserts of California, Nevada and northwestern Arizona.

REFERENCES

Britton & Rose, Cactaceae
Earle, Cacti of the Southwest

—WHE

Very long spines and purple flowers are features of *S. polyancistrus.*

ASPECTS OF THE DESERT

This area, thirty miles north of Phoenix and a thousand feet higher, is especially rich in desert vegetation — and desert snakes! The yellow-flowered bush penstemon is found here, as are two different yuccas and several species of snakes. It's attractive to the field botanist, the herpetoligist and, unfortunately, to the land developer.

PLANT A SEED AND SAVE A WHALE

By Howard Scott Gentry

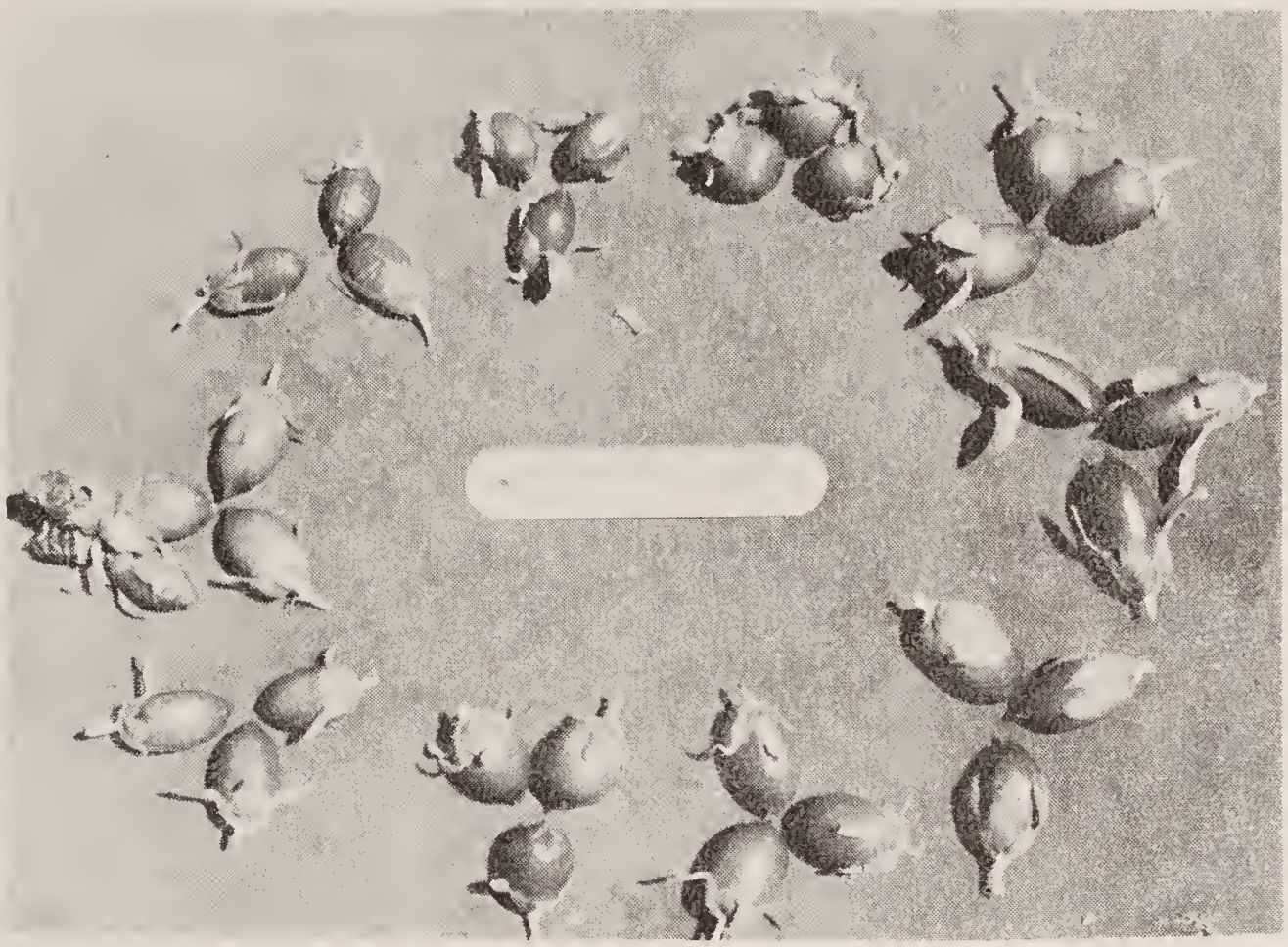
The desert boxwood, **Simmondsia chinensis** of the family Buxaceae, has recently been regaining attention. Its jolly Papago name "jojoba" is being tumbled about in the official halls of Washington and re-echoed in jojoba land itself. In the Southwest jojoba has long been recognized as a useful browse plant for cattle and deer, as a xerophytic ornamental, and especially as a source of oil. The seeds contain almost 50 percent oil. If the seeds could be harvested economically, the oil could serve as a substitute in industry for imported sperm whale oil and the waxes of carnauba and candelillo as well. The following account will briefly outline current interest in jojoba and leave the interested reader to find more background in the bibliography appended, partly keyed in the text here by parenthetical numbers, nearly all of which can be made available in the Richter Library.

The fortune of jojoba may have been forecast when the National Congress passed the Endangered Species Conservation Act of 1969 and former Secretary of the Interior

A dense, robust symmetrical shrub from Aguanga, California, Second growth after a brush fire thirty years previously.

Walter J. Hickel subsequently put the sperm oil whales on the protected list and banned imports of sperm whale oil as of December 2, 1971. Industry must, therefore, find substitutes for the 55 million pounds of sperm oil annually used in the United States. Sperm oil is now classified as a "strategic commodity and is stock-piled against national emergencies" (12).

During the past two decades the New Crops Research Branch of the U. S. Department of Agriculture has found three plant groups containing seed oils which may be



Jojoba capsules collected at Camp Creek, Arizona from one shrub. Seeds from plants in this area relatively large.

suitable substitutes for the various uses of sperm oil: 1—Jojoba; 2—the meadow foams represented by **Lymnanthes spp.** from the Pacific Coast, and 3—**Crambe abyssinica** from the Mediterranean Region (11). However, the seed oils of meadow foam and Crambe must be converted chemically to waxes and their application to special uses has not been tested. Of the three, jojoba oil is chemically closest to sperm oil in composition and has been tested in laboratories. Because **Limnanthes** and **Crambe** are annuals and may be more quickly selected for agricultural development, the USDA has limited its investigations and research to them. They yield annually, while jojoba does not yield appreciably before the sixth or seventh year. Jojoba must be regarded as a tree crop with capitalization maturing over a long period.

The Israelis have been more active in crop research with jojoba. They have several thousands of plants growing in experimental pots in the Negev Desert. They report (letter from the Negev Institute) that growth has been good with the best specimens yielding two or more kilograms of seed in the fourth year.

Noel Vietmeyer of the National Academy of Sciences recently became interested in jojoba under the stimulation of N. T. Mirov, a jojoba enthusiast of long standing (4). Vietmeyer in turn interested William Miller of the Office of Economic Opportunity, which now entertains jojoba as a possible economic resource for our southwestern Indian Reservations where jojoba is indigenous. Vietmeyer cogently summarizes the current interest in jojoba (12). "The development of a **Simmondsia** seed industry therefore has the potential of meeting the needs of industry, of whale conservation, and of Indian welfare".

Jojoba oil is chemically a liquid wax and so far as known is unique in the plant kingdom. Fats in the seeds of most plants have one molecule of glycerine attached to three molecules of fatty acids, but waxes have one molecule of a long-chain alcohol at-

tached to one molecule of a fatty acid. With this molecular structure jojoba oil is very similar to sperm whale oil and has been regarded as a potential substitute for the latter (8). Both are nontoxic and both have two long-chain alcohols with 20 and 22 atoms. The most important uses of sperm oil are as a lubricant in automobiles, in machine tools, in rifling guns, and in operating machinery at high speeds and high temperatures. It is also valuable in the manufacture of detergents or wetting agents, in dressing leather goods, and others (5, 6). Jojoba oil is very stable, does not break down under high temperatures, and does not become rancid, as do many other vegetable oils. It may find use in cosmetics and in food preparations. It is only slightly absorbed by the human digestive system and should be suitable as an oil base for non-fattening diet foods.

By the simple process of hydrogenation jojoba oil becomes a crystalline white wax and could substitute for many of the uses supplied by the imported waxes of the Brazilian carnauba and the Mexican candelilla. Candles made of jojoba wax do not wilt and bend in the hot Arizona climate, as was well demonstrated by Fred Gibson of the Boyce Thompson Southwestern Arboretum in the 1930s. The Sonorans have employed the ground roasted seeds as a substitute for coffee in times of coffee scarcity. It is reported to be used as hair oil by our Indians and some of my Sonoran friends expressed the belief that hair regularly treated with jojoba oil will not become gray and they cited elderly Indians with black hair as examples of jojoba hair oil efficacy. It is currently being marketed for hair oil by a pharmaceutical firm in Guadalahara and may be purchased in small modern vials in the Mexican "boticas". It would be an interesting research to find what other uses jojoba may have had and still has among the Indian tribes that have living contact with wild jojoba.

The genesis of similar oils in two distinctly separate lines of life is a matter for wonderment. Only the unpredictable activities of maverick man, who randomly crosses ecologic boundaries, unlinking and uplinking biotic systems, could discover a similarity between whales of the sea and the desert boxwood. This may be taken as another, and striking, example that shows our earth as a complex yet single ecosystem, where events in one part may cause biological changes elsewhere.

J. Eliot Coit, who selected the first horticultural variety, "vista", found jojoba responsive to cultural care, with and without irrigation at Vista, California (9). Some of jojoba's natural characteristics recommend it as a new crop prospect: 1—It will grow on a wide range of soils provided they are well-drained. 2—Its tolerance to drought makes it efficient with precious water. Two early plantings were reported to have suffered heavily from over-watering, viz; the large planting started near Coolidge, Arizona in the 1930s (personal communication from Fred Gibson) and the Eddy planting near Riverside, California (7). 3—Although jojoba is but a single integrated species, it shows a wide degree of variation in habit and especially fruit development. Such variations represent a genetic resource. The finding of superior individual shrubs among wild populations could accelerate the work of selection and breeding. Plants that are heavy seeders, or with very large seeds, or have racemose clusters for fruits, can be multiplied quickly from cuttings and from seeds. So, whether you go hunting deer, wildlife photos, or jojoba itself, look for unusual jojoba fruiting plants. The Desert Botanical Garden will give a reward of $50 to the first person to show us a jojoba bush with capsules two inches long.

However, jojoba is an independent wild plant that is not always responsive to the designs of man. Many problems must be solved before jojoba can be tailored to satisfy the economics of modern agricultural production. The embryonic program to develop jojoba on Indian lands is a fine conception, but it will need the sustained cooperation of institutions and special talents here in our Southwest. May the whales, the Indians, and the rest of mankind profit with the endeavor!

Jojoba's evergreen leaves, opposite, thick and leathery. Photographed just before extrusion of pistils of the axillary flowers.

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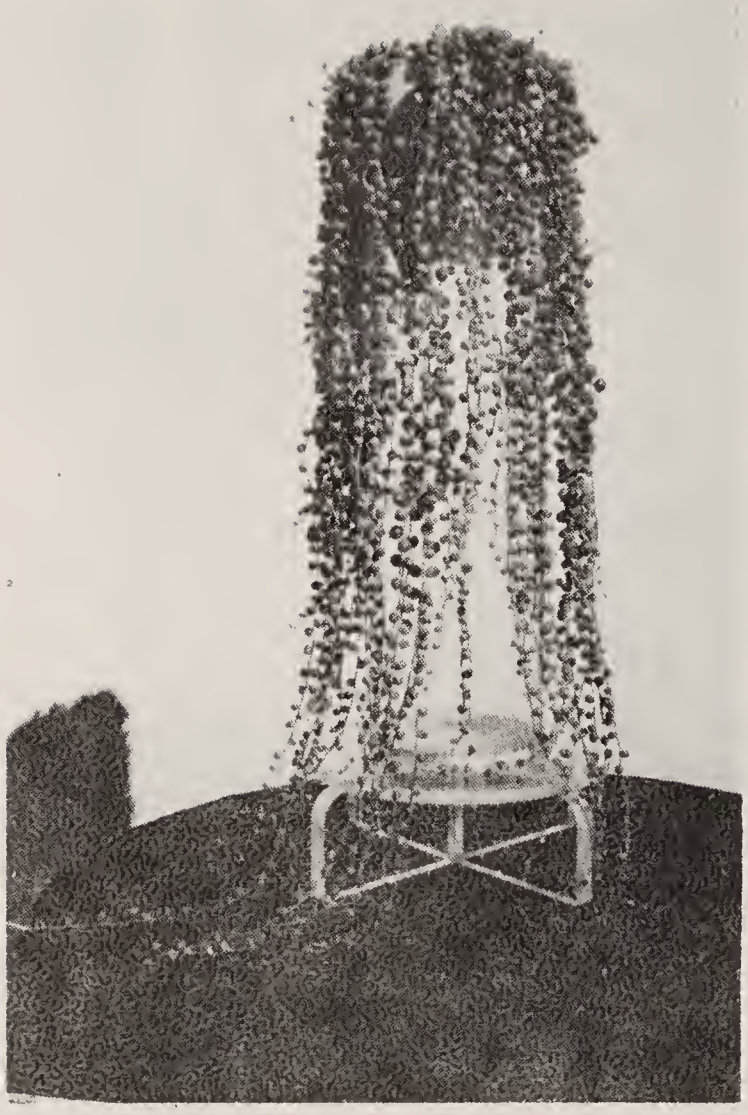

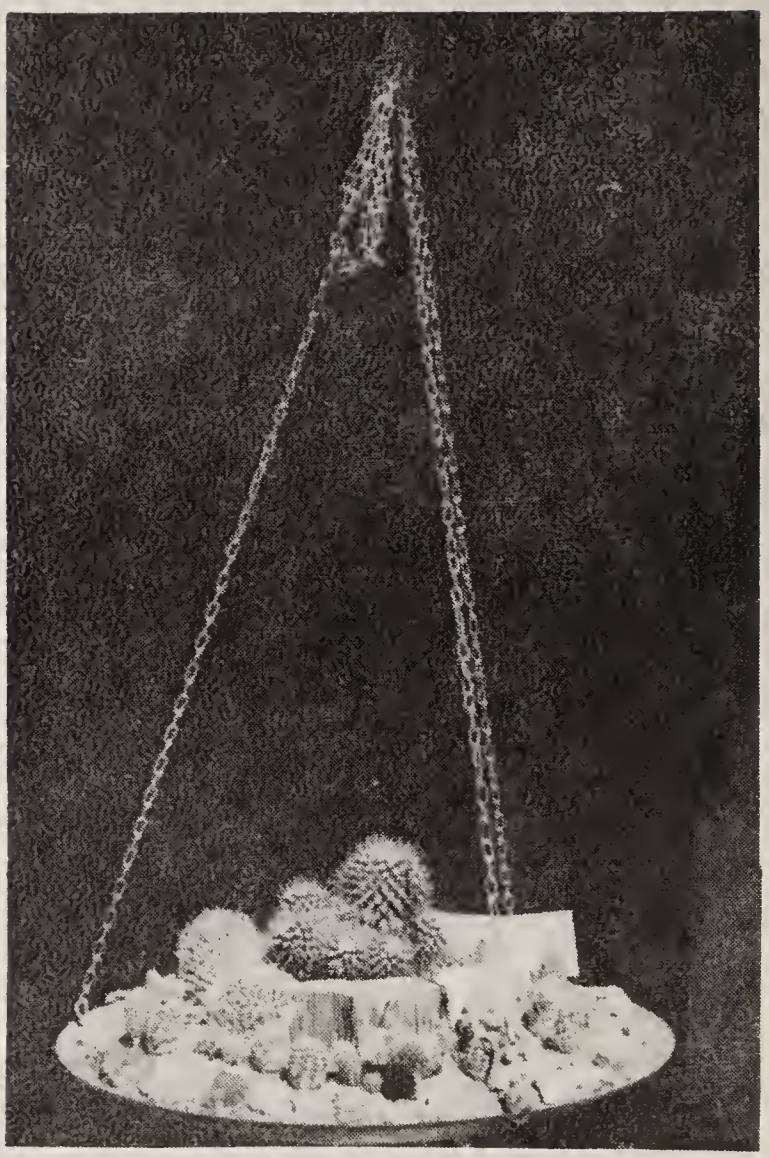

Two of Alan Blackburn's first prize winners in this year's Cactus Show. Left: *Senecio rowleyana*, in the potted succulents division. Right: Mammillarias arranged in a hanging patio planter.

GARDEN ACTIVITIES

APRIL

Mon.	**3rd**	CLASSES IN FLOWER PRESERVATION	**1 & 7 P.M.**
Tues.	**4th**	CACTOMANIACS — "Growing Problems", Lowell True, County Agricultural Agent	**8:00 P.M.**
Wed.	**5th**	CLASSES — Cultivation of Trees and Shrubs	**3 P.M.**
Thurs.	**6th**	LECTURE — Arizona Trees	**3:00 P.M.**
Wed.	**12th**	CLASS (afternoon) FIELD TRIP	**8:30 A.M.**
Thurs.	**13th**	LECTURE — Arizona Birds	**3:00 P.M.**
Sat.	**15th**	CLASS (evening) FIELD TRIP	**8:30 A.M.**
Thurs.	**20th**	LECTURE — Arizona Scenics	**3:00 P.M.**
Sat.-Sun. 22-23rd		BONSAI SOCIETY SPRING SHOW	**9-5 P.M.**
Mon.	**24th**	CLASSES IN FLOWER PRESERVATION	**1 & 7 P.M.**
Tues.	**25th**	PHOENIX BONSAI SOCIETY — Bonsai in Natural Settings (slides)	**7:30 P.M.**
Thurs.	**27th**	LECTURE — Collecting in Mexico	**3:00 P.M.**

MAY

Mon.	**1st**	CLASSES IN FLOWER PRESERVATION	**1 & 7 P.M.**
Tues.	**2nd**	CACTOMANIACS — Potluck Supper	**6:30 P.M.**
Tues.	**23rd**	PHOENIX BONSAI SOCIETY — Care of Bonsai in Summer (slides). Election of Officers	**7:30 P.M.**

THE DESERT BOTANICAL GARDEN
P. O. Box 5415
Phoenix, Arizona 85010

H-72

ARIZONA CACTUS & NATIVE FLORA SOCIETY, INC.

THE DESERT BOTANICAL GARDEN

Ballot for annual election of Board Members. Please vote for two members and mail in time to reach Phoenix by May 1st, 1972.

REG MANNING ..... ☐

CHARLES MEIG ..... ☐

Use these lines for 'write-ins':

..... ☐

..... ☐

..... ☐

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI May, 1972 No. 5

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXVI | May, 1972 | No. 5

Arizona Cactus and Native Flora Society

EXECUTIVE BOARD

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Vice President.....Edward Burrall | Treasurer.....Tom Goodnight
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Reg Manning, Charles Mieg, Mrs. Mildred May, Mrs. F. M. Feffer.

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James Cahill, Mrs. Geraldine Eliot, Mrs. Charles Gilliland, Mrs. Homer Lininger, Miss Eleanor B. Sloan, Donald W. Hutton

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Cover: An unusual white-flowering Ocotillo *Fouquieria splendens* found north of Phoenix amongst regular red-flowering ocotillos.

Desert Botanical Garden of Arizona

STAFF

Director.....W. Hubert Earle
Botanist.....Dr. Howard S. Gentry
Horticulturist.....John H. Weber
Curator of the Herbarium.....J. Harry Lehr
Secretary .....Barbara Worbington
Bookstore .....Ann Shelstad
Maintenance and Bookstore.....Lynn Trainum
Maintenance and Bookstore.....Donald C. Shelstad
Student Horticulturists .....Rodney G. Engard, David Squire

Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

The Desert Botanical Garden has reached another milestone in its ever increasing growth with its planning, building and dedicating of its Herbarium that is without debt and dedicated April 16th to the memory of Lois Porter Earle my late wife.

Over one hundred persons including the Executive and Advisory Boards attended a most inspiring service. Its program conducted by Chairman of the Boards, John H. Eversole is on the following pages.

Many persons wholeheartedly approved the action of the Board who used the Memorial fund to Lois for the furnishing of the Herbarium that is needed for its research use.

The Memorial fund was instigated by Lillian & Charlie Mieg, Wilma and Fred Baselt in Jan., 1968, and we certainly all owe them a debt of gratitude for their fine efforts. They accepted over $3700 from 258 donors that was placed in a trust until it was needed. We again wish to thank all those who sent in memorials for being so patient, now after four years they can see the fruits of their gifts.

Fred Baselt is to be thanked for his excellent photographs of the occasion which appear on the following pages.

Return cards for the election of Board Members for 1972-73 have been coming into the office quite well. Be sure and mail your card if you have not already done so. The Members Meeting is scheduled for May 7th at 3 p.m. in the Richter Memorial Library. Make an effort to be there!

The Executive and Advisory Boards will meet May 17th at the Kiva Club for a dinner and reports of the year's activities and financial report: fiscal year is May 1st to April 30th. Any suggestions you may have should be given or mailed to Secretary Angela Bool prior to the meeting.

Exerpts of two letters, of many we receive each week from overseas should be shared with you: "April 16, Dear Sir: About 8 weeks ago, I got some Cactus seed from your Garden and the rate of growing is 100 percent. I am very happy to send you this letter . . . With thanks, Vichitrasak Sarasophana, Bangkok, Thailand."

"April 11th . . . I read Saguaroland Bulletin with delight whenever it comes. And I often wonder why your organization is such a lively one. The only one of its kind. Jurg Rau, St. Gall, Switzerland." This is merely a small 'look - in' into why our Garden is such an International subject.

J. W. Forrester, Alfred P. Sloan School of Management, M.I.T. Cambridge, Mass authored **World Dynamics** which is a model composed of statistics fed into a computor. Forrester has chosen five quantities: population, natural resources, capital investment, fraction of capital investment in agriculture and pollution which are of significance in the world systems.

This is a most provocative work and should be read by all those persons interested in ecology, etc. It does not solve the current problems but attempts to view the world environmental situation holistically.

PROGRAM

DEDICATION OF THE HERBARIUM
TO THE MEMORY OF
LOIS PORTER EARLE

Chairman: John H. Eversole, Chairman of the Executive Board — Desert Botanical Garden.
Invocation: Dr. Harald Frey — First United Methodist Church of Tempe
Welcome: John H. Eversole
Garden's Growth: John H. Rhuart, President — Desert Botanical Garden
Address: James E. Patrick, Retired Chairman of the Board of Directors — Valley National Bank.

Unveil Placque
Cut Ribbon and enter Herbarium
Refreshments served in the Richter Memorial Library
Sunday April 16, 1972 3 p.m.
Desert Botanical Garden, Phoenix, Ariz.

LOIS PORTER EARLE passed away with a coronary Jan 4th, 1968. She had been married to the Garden's Director for 35 years, they having two sons: Arthur, a H.S. Science teacher at Concord, Calif. and John, a cost engineer with the W. S. Krueger Printing Co., Phoenix, Arizona.

She accompanied her boys and husband to Phoenix Sept. 1945 and worked for the Comstock Steel Co., until her husband regained his health and joined the Garden Staff in 1947. Later she became head of the payroll dept. of the Arizona State University but left it in 1957 to help part-time at the Garden where she 'set up' its first bookkeeping system.

She was very active in the First United Methodist Church of Tempe, serving on the Music Commission, teaching Sunday School and being a Liturgist at the Sunday services. As a Memorial to her the Music commission equipped its choir with lovely Persian-blue choir gowns in 1969.

She had a great interest in bowling, tennis, golfing and swimming. She enjoyed hiking with her family and exploring the desert for plants, rocks, artifacts, etc. She traveled extensively in Mexico, Japan and the far east. She loved people and was a great asset to the Garden in that she made strangers feel at home in our desert.

The dedication of this Herbarium to her memory would be one of her fondest dreams and would make her justly happy.

THE BACKGROUND AND GROWTH OF THE DESERT BOTANICAL GARDEN

Address by
JOHN H. RHUART, President
Desert Botanical Garden
On the occasion of the
Dedication of the
Herbarium

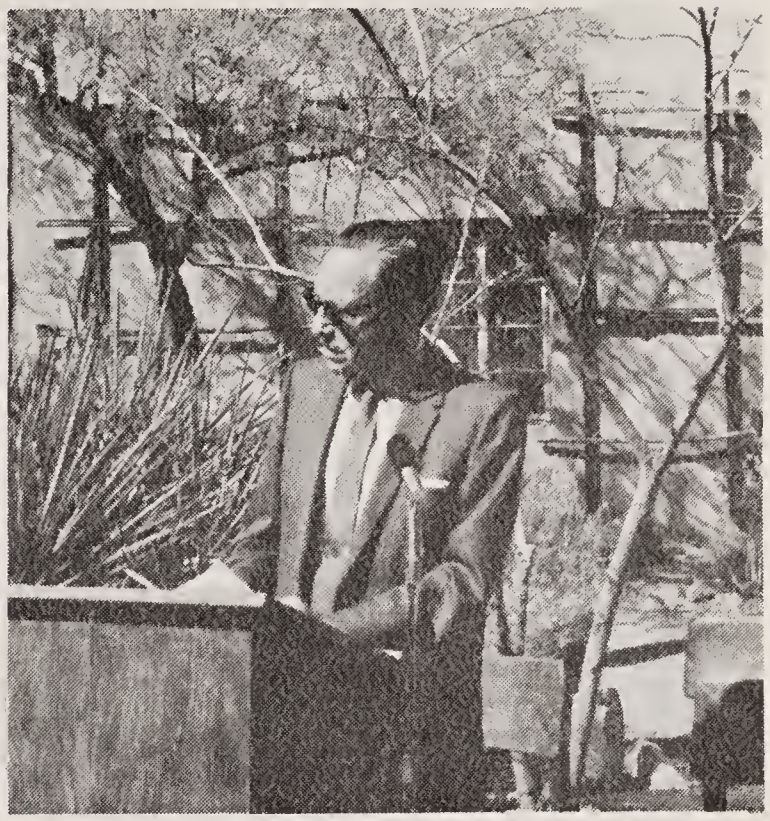
Since many persons are unaware of the purposes, goals and origin of the Desert Botanical Garden, I would like to take you back to the very beginnings and early history of the garden. I have very recently reached the mandatory retirement age at the Valley National Bank and as a result, I have had more time to reminisce about the past so here goes.

In about 1921, Mr. Gustaf Stark, an engineer with the Salt River Water Users Power Project, began to conduct classes about the desert flora at his home in Scottsdale on Sunday afternoons. He had gathered quite a large collection of cactus at his home. He also conducted field trips from time to time and took his classes over the desert into an area that is now occupied by Goldwaters' Fashion Square and the Safari Hotel. Many Phoenix people would drive out in their Model T's or arrive by horseback for these Sunday classes.

In the late 1920's members of these classes formed an organization which they called the Arizona Cactus and Native Flora Society, Inc. which still remains as our corporate name.

In the early 30's Mrs. Gertrude Divine Webster, a New Englander, became interested in the organization, mainly to learn the names of the cacti which she was planting around her new home in Arcadia. This was on the south slope of Camelback Mountain just East of 56th Street on what is now Alta Hacienda Drive.

The Society, with the urging of Mr. Stark and the influence of Mrs. Webster, was able to get a bill through the Arizona House setting aside 300 acres in Papago Park on which to establish a desert botanical garden in an unspoiled desert setting to be viewed by future generations.



John Rhuart

It was during this period that Mrs. Webster had a number of organizational dinners at her home to get local people interested in supporting the garden. To some of these affairs she brought George Lindsay, a young California Botanist, to advise on the establishing of the garden. There are four of us, including myself, present here today who attended these organizational affairs of Mrs. Webster's: Miss Eleanore B. Sloan, the daughter of our territorial governor, Mrs. Charles H. Gilliland, who then had a very extensive date and citrus grove along 40th Street, south of Camelback Road, and Mrs. Angela Bool, who, with her husband Herbert, grew cactus for sale at their greenhouses on East Camelback Road. As I remember, other early supporters who attended these meetings were Mrs. Lou Ella Archer, who was a very staunch supporter and the president of the garden for many years during her lifetime, the Rev. Peter Dowdell, Col. Joseph Edward Thompson, who had Tropical Groves Nursery and a large estate called Rancho Joaquino on East Thomas Road and 44th

Street, Mrs. Ernest W. Lewis, Mrs. Helen Anderson, who became Mrs. Roy Murray, Mr. Harry Fennemore, Mrs. Thomas S. O'Connell, and Mrs. Arthur Lee of Tucson and Patagonia.

In 1937 the Administration Building was constructed with W.P.A. labor, while Mrs. Webster contributed the materials and supplies at a cost of $17,777.00. The Garden was opened to the public at that time under the directorship of George Lindsay who is now director of the National Academy of Sciences at San Francisco.

The Garden was closed from 1941-1946 due to World War II and lack of transportation. It was during this period that W.E. and Katharine Walker, early day treasurer and secretary respectively were instrumental in keeping the Garden going and in obtaining an elderly couple who lived on the premises and acted as caretakers.

It was re-opened December of 1946 by W. Taylor Marshall who directed its expansion until his death in August 1957. He erected the Archer House, Cactus House, Rest Rooms building, conducted classes and gave lectures. We were always very fortunate in having our director's wife being a strong helping influence on the Garden and Mrs. Therese Marshall was such a person.

W. Hubert Earle, who came to the Garden in 1947, then became director in 1957. In the ensuing years the Visitors Building, Succulent Lath House, Richter Memorial Library and now the Herbarium have been built.

Needless to say the Garden has grown in other departments: memberships have increased from 325 to 1440 with members in 22 different countries; two new books have been published and a Bulletin is mailed to each member ten times a year; thousands of Valley residents have attended weekly classes and lectures in "A Better Understanding of Desert Plants," many others have availed themselves of the many nature trips taken into the desert. Cactus Shows have been held each February for the past twenty five years. I remember the first cactus show was held at Col. Thompson's estate, Rancho Joaquino. Bonsai and Orchid societies have had shows at the Garden and over 100,000 visitors view the Garden yearly. The Garden is self sustaining and all of this has been accomplished without government assistance and without any major capital drives.

One of the very active arms of the Garden is the Cactomaniacs, founded and fostered by our Board Member Charlie Mieg.

No Garden can operate unless it has a substantial Board of Directors and this Garden has been blessed by such a Board with most of its members having served 20-25 years. This reflects their continuing interest in the Garden's success.

Through these years of Garden activities Lois Porter Earle was the Director's right arm and he depended on her judgment, ability and helping hand to further the advancement of the Garden in her every thought and deed. We are indeed grateful to her today as we dedicate this Herbarium in her memory.

John Eversole conversing with Mr. & Mrs. Reg Manning.

DEDICATION OF THE HERBARIUM TO THE MEMORY OF LOIS PORTER EARLE

ADDRESS GIVEN BY:
James E. Patrick,
Retired Chairman of the
Board of Directors—
Valley National Bank

James E. Patrick

It is indeed a pleasure to participate in the dedication of this splendid Herbarium to the memory of Lois Porter Earle.

This is a most unusual Herbarium for it already has deposited within it thousands of sheets of dried desert plants from deserts of the world to be studied by students, botanists and researchers for hundreds of years to come. These dried plants will last indefinitely, some now in this Herbarium were collected and dried in 1880 and are still in perfect condition.

This Herbarium building has grown from a small beginning in a bedroom of the Administration Building that was started as a herbarium by Ass't Botanist E.R. (Jim) Blakley in 1950. He assembled over 2000 sheets before he left in 1956 to become Supt. of the Santa Barbara Botanical Garden. The George B. Hinton collection of over 600 sheets made from 1932 to 1936 were donated to the Garden by Mrs. Walter Douglas of Phoenix in 1953. A collection of over 700 sheets collected by Mrs. Rose Collum of Rye, Ariz. from 1930 to 1938 were also given to the Garden by her estate in 1953.

An outstanding collection of the flora of Arizona is being assembled by Curator Harry Lehr who began to systematically assemble over 2000 sheets two years ago and now numbers over 6000 sheets. Many of these Arizona plants are in duplicate for we have numerous requests that they be loaned to botanical institutions and universities for research purposes here and abroad.

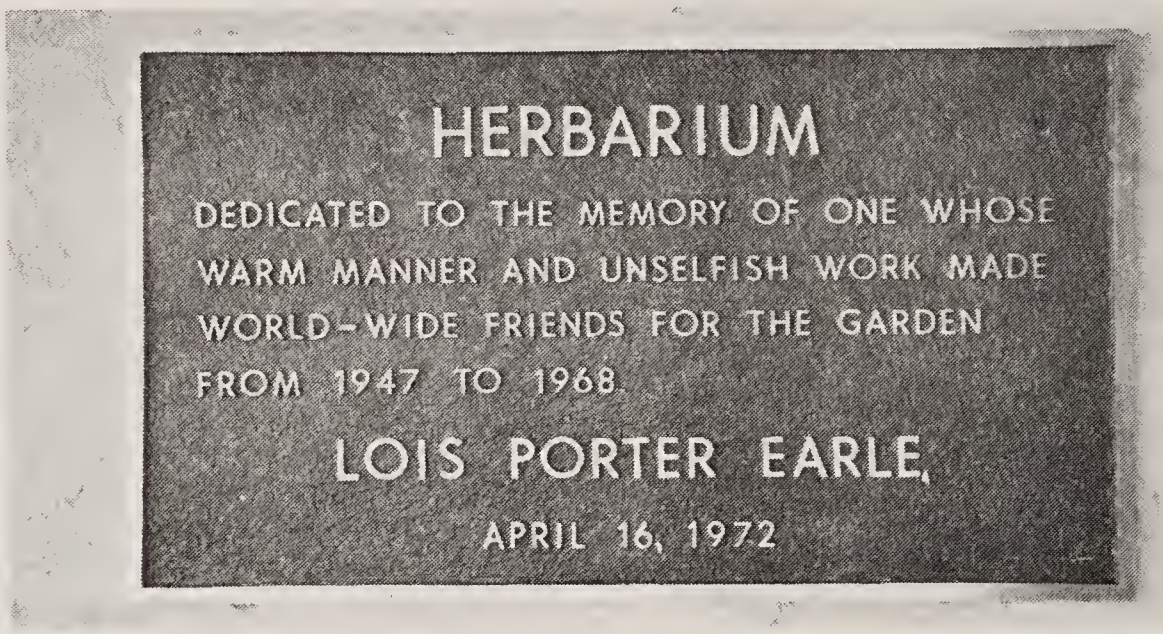
Dr. Howard Gentry, our research botanist, has loaned over 20,000 of his sheets pertaining to the Agaves (Century plants) and other plants that he has collected and mounted over the years. He is now working on a five year research program to assemble these Agaves of the Americas into their proper rank. His findings and research work will be published at the completion of the program. His new book "The Agave family of Sonora" was released last month by the U.S.D.A.

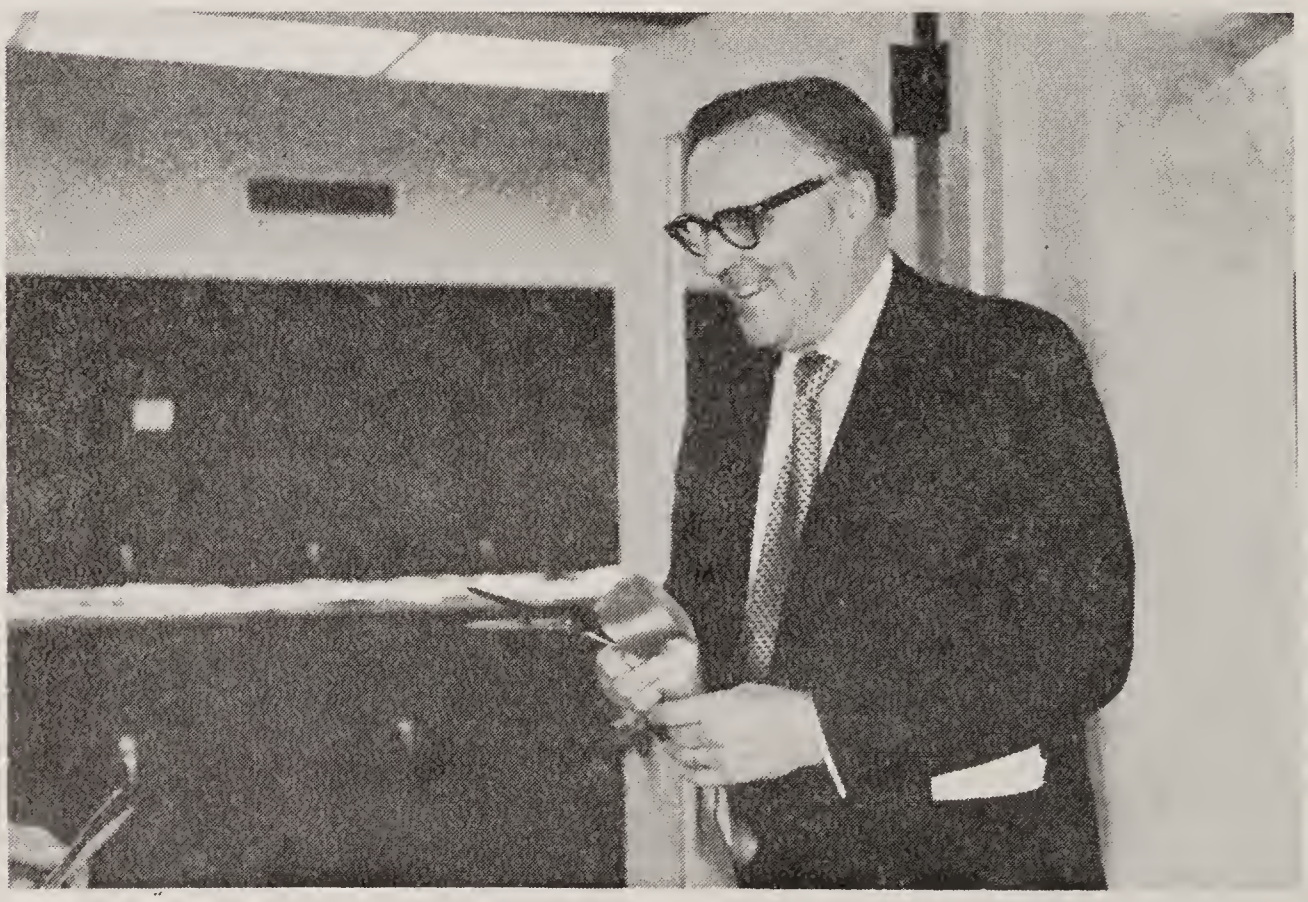
This is a building that is needed in every Botanical Garden but very few Gardens can support such an operation and have the qualified personnel. It will be in use for years to come by researchers from here and abroad and is indeed a credit to Arizona and the City of Phoenix.

It is only just and fitting that this building should be dedicated to the memory of Lois Porter Earle. I knew her back in Indiana when we were both working our way through Indiana University at its University Book Store during the years of 1926-1930.

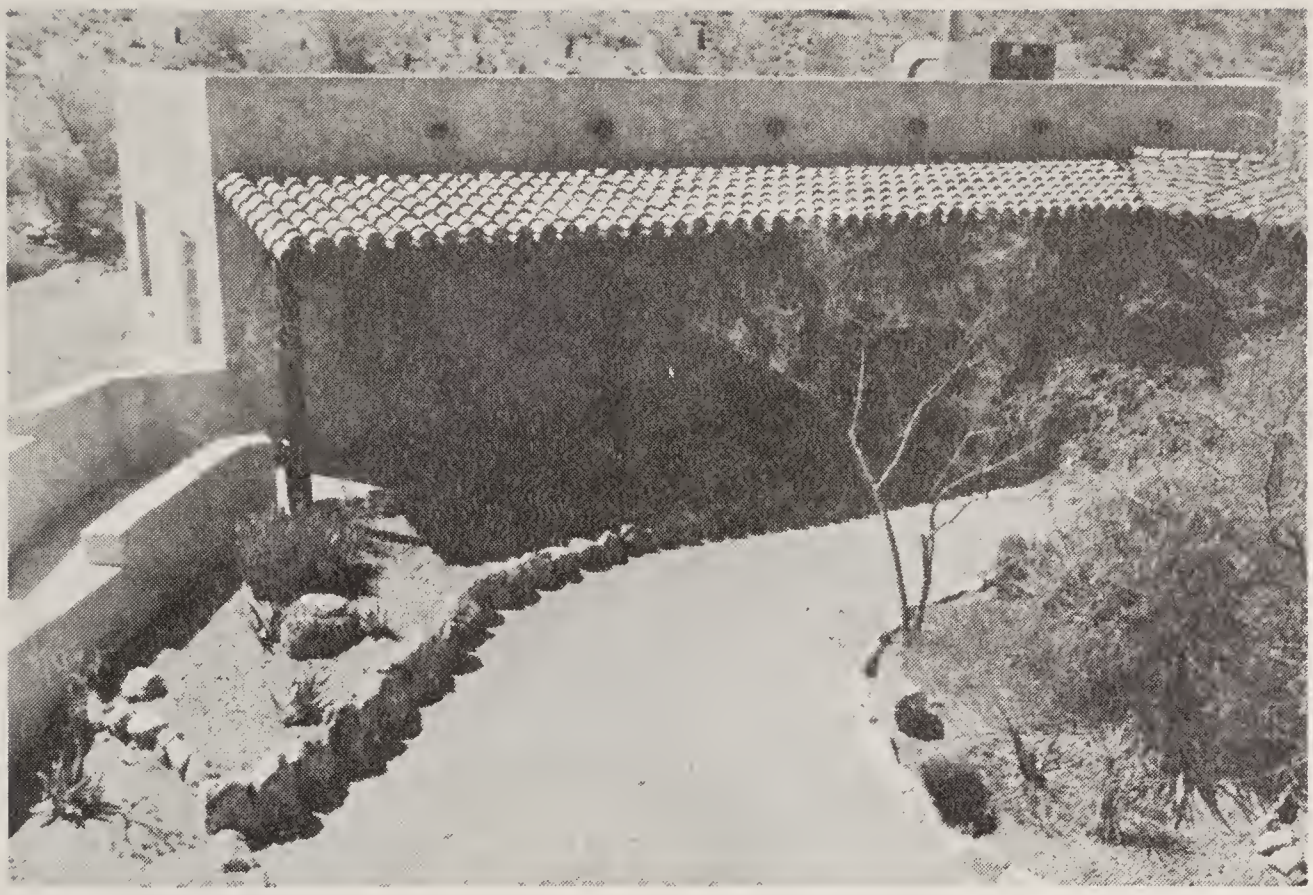
Here in Arizona; when she arrived in Sept. 1945 with her husband (Hubert), who had to seek a drier climate due to health reasons) and sons Arthur and John. I watched them grow up and serve their community. The story of the Earle family is another inspiring and heart warming experience in our beloved Arizona.

It is with pride and humility that I here by dedicate this Herbarium to the memory of one we loved — Lois Porter Earle.


HERBARIUM
DEDICATED TO THE MEMORY OF ONE WHOSE
WARM MANNER AND UNSELFISH WORK MADE
WORLD-WIDE FRIENDS FOR THE GARDEN
FROM 1947 TO 1968.
LOIS PORTER EARLE,
APRIL 16, 1972



James E. Patrick cutting ribbon at entrance into Herbarium.



View of Herbarium from roof of Webster Auditorium.

Patio porch showing entrance into Herbarium.

Early arrivals: Mrs. Angela Bool — Secretary of the Executive Board, Miss Eleanor Sloan — Advisory Board, C. C. Pidgeon member of Garden since 1947, Miss J. Ridder, Mrs. Lois Eversole wife of John Eversole, and Mrs. Wilma Baselt — member.

Mildred May member of the Executive Board.

Frank Kennessey scanning herbarium sheets.

Mexican Cactus

MAMMILLARIA
longiflora

Cactaceae

This attractive densely spined Mammillaria is quite similar to many other hooked pincushions but when it flowers you are startled at its long tubed flowers arising from near its apex thus accounting for its specific name.

It was collected by Dr. Edward Palmer in 1877 at Santiago Papasquiaro, Durango, Mex. It was studied by Britton & Rose for about 25 years who were puzzled by its sunken ovary and hidden seeds. They then first described it in Cactaceae 1923 as **Neomammillaria longfilora.** Berger assigned it to **Mammillariia longiflora** in 1929. Craig in Mamillaria Handbook referred to it as **Mammillaria longiflora** (B & R) Berger 1945. It had been given the generic name of **Chilita** by Orcutt in 1926 and **Kranzia** by Backeberg in 1938.

This small mammillaria is usually a simple dark green plant but can become cesptiose or clustered growing up to 2½'' high and 2'' wide. Its tubercles are arranged in 5-8 spirals and up to ½'' long; areoles are oval with white wool when young later becoming naked; axils are nearly naked; central spines are arranged in fours with the lower spine hooked and the upper three spines straight, all being about ¾'' long of a reddish brown color; 25 to 30 radial spines about ¾'' long are of light yellow color all ascending from the areole; flowers are funnelform as shown in the photographs with a long narrow 1½''-2'' long tube with a 1¾'' flower of a pleasant pink color. If flowering in the shade the flower is of a light pink. Ovary is quite small, is hidden in the axils of the plant and produces black globose seeds 1-16'' in diameter.

This easy to grow plant flowers in late April and May then sometimes flowers again in the fall. The flowers will remain open 3-4 days. The plant prefers a loose soil and partial shade.

Type locality: Santiago Papsquiaro
Distribution: State of Durango, Mex.
References: B & R, Cactaceae; Bravo, Las Cactaceas de Mexico; Craig, The Mammillaria Handbook

—WHE

Arizona Cactus

STOUT-NEEDLED "MULEE"
Coryphantha muehlenpfordtii var. robustispina Cactaceae

This robust "mulee" (cactus fanciers abbreviation of the specific name **MUEHLENPFORDTII**) is an outstanding rugged appearing miniature barrel with its stout and colorful formidable spines.

It was first described by Schott in Engleman's Proceedings of the American Academy in 1856 as **Mammillaria robustispina** and progressively under other synonyms until Britton & Rose placed it in the genus **Coryphantha** which was erected by Lemaire in 1868, a greek word meaning "flower on top of plant." Benson in Cacti of Arizona now carries it under a new combination as **Coryphantha scheeri var. robustispina** as the plant was first described as **Mammillaria scheeri** by Muehlenpfordtti in 1847, thus the specific name has priority.

This single globular plant, that sometimes clusters, is 6"-8" tall and 4"-6" wide with prominent grooved nipples terminated by a strong correct yellow to red central spine and a cluster of 8-10 spreading rigid yellow to gray radial spines; axils of the 1"-1½" long tubercles are filled at first with a grey wool that later disappears; flowers are deep yellow with a tinge of brown followed by club-shaped juicy green fruits about 1" long having brown seeds.

This is an easy to grow plant either in the ground or potted. It will take full sunshine but its gray-green appearance will become green if grown in broken shade with a minimum of watering.

Type locality: South of the Baboquivari Mountains along the Mexican border.

Distribution: Grassy hillsides and broken woodland 2500'-5000' elevation in the upper Arizona desert and S-W Oak woodland south of Tucson into northern Sonora.

References: B. & R., Cactaceae; Benson, The Cacti of Arizona, Earle, Cacti of the S-W.

—WHE

GARDEN ACTIVITIES

MAY

Tuesday	May 2nd	CACTOMANIACS—Potluck supper	6:30 P.M.
Sunday	May 7th	ANNUAL MEMBERS MEETING	3:00 P.M.
Wednesday	May 17th	BOARDS DINNER	7:00 P.M.
Tuesday	May 23rd	PHOENIX BONSAI SOCIETY—care of Bonsai	
in Summer (slides)		Election of Officers	7:30 P.M.

No lectures or classes given from May through October. The Garden is open daily all through the year including weekends and holidays.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI June-July, 1972 No. 6

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXVI | June-July, 1972 | No. 6

Arizona Cactus and Native Flora Society

EXECUTIVE BOARD

Chairman of Board....John H. Eversole
Vice President.....Edward Burrall
Secretary.....Angela Bool
President.....John H. Rhuart
Treasurer.....Tom Goodnight
Chief Counsel.....Richard B. Snell
Reg Manning, Charles Mieg, Mrs. Mildred May, Mrs. F. M. Feffer.

ADVISORY BOARD

Chairman, Les Mahoney
James Cahill, Mrs. Geraldine Eliot, Mrs. Charles Gilliland, Mrs. Homer Lininger, Miss Eleanor B. Sloan, Donald W. Hutton

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Progress photos of 1971-72..... 70

Cover photo—26′ tall *Agave americana flower stalk* bent over by the recent winds.

Desert Botanical Garden of Arizona

STAFF

Director.....W. Hubert Earle
Botanist.....Dr. Howard S. Gentry
Horticulturist.....John H. Weber
Curator of the Herbarium.....J. Harry Lehr
Secretary .....Barbara Worbington
Bookstore .....Ann Shelstad
Maintenance and Bookstore.....Lynn Trainum
Maintenance and Bookstore.....Donald C. Shelstad
Student Horticulturists .....Rodney G. Engard, David Squire

Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

1971-72 was another GOOD year and it is a pleasure to record the Director's Report.

The Garden's 1971-72 income increased to $135,915.70 and expenditures of $130,118.39. The narrow margin of difference was due to $4000 less received from our Endowment fund, $1071 less from memberships and $1200 less from contributions. But bear in mind that we contributed $17,197.90 to the start of a Retirement Fund. The Board justly feels that it is essential that we build up a retirement for our employees and curb our buildings program. Our facilities are now adequate for our needs for another decade.

We well exceeded our anticipated 1971-72 budget both in income and expenditures that had been increased by 10 percent over 1970-71. We will increase the 1972-73 budget by about 12 percent which will be about in line with past years results. The Annual Financial Report on the following pages will give you a good perspective of our operations.

The construction of the Herbarium Building added an outstanding facility to our complex of buildings. It's Dedication was carried in the May issue of Saguaroland Bulletin. It is being used by Dr. Howard S. Gentry, Harry Lehr, other members of the Staff and students who bring in plants for identification. Many new plants have been brought into the Herbarium by Staff members to be dried,mounted, identified and placed in cases for future reference and study. This will enable us to do better research on desert plants.

The Herbarium was designed by our architect Les Mahoney, constructed by Life member Dean Coffman and furnished with funds from the Lois Porter Earle Memorial. We had anticipated that it would cost us about $32,000 to relocate the Shop and Storage building and prepare the ground for its construction. Actual cost was $33,878.33. The increased cost was due to the additional construction of a ramp, iron gate entrance and a service road alongside of the Herbarium. The iron gate was given to the Garden by the Helen Brinton estate several years ago. It is flanked by an iron fence and makes a most attractive entrance into the patio from off the Webster Auditorium east porch and makes an easier flow for foot traffic.

Last summer we installed a 1200 gallon septic tank for the Administrative Building. The old tank of 300 gallons installed in 1937 became too small for present day needs. An additional 200' of 1'' water line was extended from the new Herbarium building into the Arizona section to assure a better pressure for our ¾'' watering lines. A small aluminum shed 8'x8' was erected west of the storage building for the approved storage of paints and inflammables.

The Garden attained a 'Fresh' appearance last fall after three months of trimming of trees and shrubs by John Weber and his crew. This summer they will plant-out over 800 Agaves grown from seeds and offsets collected in U.S.A. and Mexico. These will be invaluable for horticultural and botanical research for year to come.

Our Staff has been aiding the Office of Economic Opportunities (Indian Division) in locating Jojoba fruit. A story of these plants by Dr. Howard S. Gentry was in the April issue of Saguaroland Bulletin — please refer to it for information. Additional stories have been carried in many newspapers and magazines over the country, but Dr. Gentry's is the best.

An International Conference on Jojoba was held at the University of Arizona June 1-3 which attracted over 120 persons. Dr. Howard Gentry's lecture was "The Natural History of Jojoba." John Weber and your Director also attended.

This project should make a feasible crop and income for the Indians on their Reservations. A high degree of interest and optimism prevailed at the meeting.

The Garden is seeking a $28,000 grant from the National Science Foundation for research of the Agavaceae and related genera to be conducted by our Research Botanist Dr. Howard S. Gentry. The last treatise on the Agaves was made several decades ago. A new concise study needs to be done to determine their proper taxonomic and nomenclature standings and to include Agaves discovered in recent years. We are rather optimistic and feel that the grant will be made sometime this fall.

Your Director and wife Lucy had a "dream" trip last fall. We contacted and consulted with botanical garden directors and staffs through the Orient, Far-east, Australia, New Zealand, Pacific Islands and Hawaii. We arrived in Perth, Western Australia at the height of their wildflower season. We were able to photograph hundreds of different flowers and collected over a 100 specimens for the Herbarium of Western Australia, Kings Park of Perth and our Desert Botanical Garden Herbarium. Have given several showings of these wildflowers at the Garden and to groups through the State and California.

Another honor has come to the Garden in that the University of Arizona Alumni Association has bestowed on your Director the Distinguished Citizen Award for 1972. Drop in and see it hanging in my office.

MEMBERS ANNUAL MEETING

John Rhuart, President of the Arizona Cactus and Native Flora Society, Inc., presided at its Annual Members meeting held in the Richter Memorial Library Sunday May 7th. Angela Bool, Secretary, read the minutes of the last meeting held May 2, 1971 which were approved.

"Mailed-in" votes were tabulated by Mrs. Alice Feffer and Mr. Don Hutton. Reg Manning and Charles Mieg were reelected for three year terms. Fourteen "write-in" votes were recorded for twelve persons.

The activities of the past year were enumerated by Director W.H. Earle who also spoke on the plans for 1972-73.

Several of the members attending the meeting suggested constructive activities and projects for the coming year which will receive consideration by the Board at the Annual meeting May 17th.

THIRTY-SEVENTH ANNUAL BOARD MEETING

Executive and Advisory Boards and their spouses were the appreciatve guests of our Treasurer Tom Goodnight and his wife Gladys at their spacious rambling home north side of Mummy Mountain on May 17th for a lovely dinner which was followed by the Annual Boards meeting.

Due to the illness of Barbara Worbington, the Garden's secretary, printed Annual Reports were not completed for the meeting but have since been mailed to all Board members.

Re-elected to the offices of the Board were: Chairman — John H. Eversole, President — John H. Rhuart, Vice President — Edward Burrall, Secretary — Angela Bool, Treasurer — Tom Goodnight. Encumbent Board Members Reg Manning and Charles Mieg were re-elected to the Board for three year terms by 'mailed-in' votes tabulated at the Annual Members Meeting May 7th.

Treasurer Tom Goodnight reported that the income was the highest to date, expenses and building was high but the profit as shown is to be used for future building program.

The accomplishments of the Garden's past year and the improvements for 1972-73 were given by Director W. H. Earle.

Property exchange and lease with the City of Phoenix are to be reviewed by our Counsel Dick Snell. Then John Eversole, John Rhuart and your Director are to consult with Charles Christensen of the City Parks Dept. and the Phoenix Park Board on the renewal of the Garden's lease.

The Retirement Fund, now in effect, will be reviewed by Tom Goodnight and Ed. Burrall before its renewal on June 1st. The premium of $7,800 has been deposited in the Retirement Fund from past year's operation.

Mrs. Frank (Alice) Feffer and Mrs. Robert (Mildred) May were appointed to review our advertising budget and suggest a plan of action.

Director W. H. Earle spoke of the newly formed P.A.C. (Phoenix Activity Complex) composed of organizations in and adjacent to Papago Park to promote Legend City, Royal London Wax Museum, Phoenix Zoo, Desert Botanical Garden, Papago Golf Course, Phoenix Municipal Stadium, Tempe Rolling Hills Golf Course, Pueblo Grande Ruins and other points of interest in this 1000 acres of Recreation, Education and Entertainment.

(Continued on Page 68)

ARIZONA CACTUS & NATIVE FLORA SOCIETY, INC.
SPONSORING THE
DESERT BOTANICAL GARDEN
FINANCIAL REPORT
5-1-71 — 4-30-72

	Comparison 1971-1972	1970-1971
ASSETS		
Accounts Receivable	$ 251.81	$ 424.44
Inventory	13,623.08	11,827.89
Deposit-State Compensation Fund	325.00	325.00
Cash		
Retirement Fund	8,535.88	16,423.60
Valley Nat'l Bank-Checking Acct.	5,864.38	5,623.84
V.N.B.-2 Certificates of Deposit	00	15,286.71
V.N.B. Savings Account	10,016.53	12,711.41
1st Federal Savings, (C.of D.)	3,411.32	3,237.42
1st Federal Savings, Savings Acct.	2,243.68	1,845.60
Petty Cash, Pop Machines & Cash registers	324.40	289.00
	$44,596.08	$52,708.20
In Trust —		
Clifford M. Schroeder Memorial Fund	$ 606.48	
LIABILITIES		
Accounts Payable	$ 52.00	$ 411.12
Arizona State Compensation Fund	53.30	47.11
Arizona Withholding Tax	45.46	43.46
Arizona Unemployment Tax**	93.52	00
Federal Unemployment Tax**	70.45	00
**Began participation in 1972	$ 314.73	$ 501.69
INCOME		
Retail Sales	$78,559,14	$76,031.80
Retail Sales Tax***	1,436.97	
Wholesale of Garden Books	4,286.82	3,466.00
Wholesale of Garden Seeds	2,147.14	1,716.70
Contributions	357.76	1,564.39
Voluntary Admissions	23,371.69	20,807.52
Memberships	6,943.00	8,014.00
Endowment	16,000.00	20,000.00
Library Fund	702.53	251.60
Interest & Dividends	1,775.48	1,090.65
Herbarium Fund	126.17	00
Miscellaneous	209.00	463.84
Valley National Bank Loan	16,000.00	
	$151,915.70	$133,406.50

***Sales Tax records started being kept after 2 double tape cash registers were purchased in November 1971, for more accurate records.

EXPENDITURES	Comparison 1971-1972	1970-1971
Purchase for Bookstore resale	$43,300.58	$45,851.71
Arizona retail sales tax	2,736.38	2,207.33
Gross Wages	42,352.97	38,820.07
Payroll taxes, Federal Employer	2,599.82	2,131.65
Office Supplies & Stamps	1,696.52	1,516.93
Library-books, subscriptions and supplies	529.47	332.58
Herbarium supplies	406.61	199.66
Monthly Saguaroland Bulletin	1,960.50	2,696.01
Utilities	3,236.63	3,192.06
Fleet expenses	2,123.60	2,003.70
Insurance-Life, Accident & Hospital	2,559.29	2,340.16
Retirement Fund	17,197.90	00
Insurance-State Compensation Fund	674.07	680.46
Insurance-Fire, Theft, Liab. and Property damage	2,326.40	2,133.80
Cactus Show	444.21	423.45
Travel, entertainment, Public Relations and Miscellaneous	859.79	2,313.59
Advertising	922.96	352.36
Garden and Building Maintenance	1,724.55	2,307.20
Lease	25.00	25.00
Wholesaling books	26.71	70.65
Valley National Bank Loan & Interest	16,105.78	00
Transfer of funds	13,000.00	16,000.00
CAPITAL IMPROVEMENTS:	36,187.05	3,874.28
Storage Shop, $254.79		
Septic tank, $550.00		
Iron gate on patio, $312.00		
Three beds of plants, $350.00		
Two new double tape cash registers, $823.68		
Wrapping tape dispenser, $18.15		
Herbarium building, $30,021.47		
Herbarium furnishings, $3,856.96		
	$192,996.79	$129,372.65

1972-1973 Garden Improvement Program

Grade and black top road into service area and for parking	$12,000.00
Build wall in front of butane tank	150.00
Insulate and roof Administration Building and restroom	3,500.00
Erection "date placques" on existing Buildings	300.00
New Student entrance to Garden from Parking lot	500.00
	16,450.00

ATTENDANCE of **101,687** persons contributed **$23,371.69** or **$.22** per person to Voluntary Admissions.
RETAIL SALES of **$78,559.14** divided by **101,687** persons averaged at **$.77** per person.

MEMBERSHIPS	1239	1971-1972	1113	1969-1970
	1353	1970-1971	993	1968-1969

ANTICIPATED BUDGET 1972-1973

Bookstore sales	$ 80,000	Purchases for Bookstores	$ 40,000
Wholesale seeds	2,000	General operating	9,500
Wholesale Garden books	4,000	Bldg. & Improvements	1,500
Contributions	1,000	Fleet operation	1,500
Voluntary Admissions	24,000	Utilities	3,300
Endowment	16,000	Insurance*	12,000
Memberships	6,500	Sales tax	2,800
		Gross Wages	45,000
	$133,500		$115,600

*Includes retirement fund payments

The following groups MET AT THE GARDEN				
103	Grade Schools	5,477	9	Cactomaniac 517
10	High Schools	252	24	Garden Lectures 651
4	Colleges	200	15	Desert plant classes 680
10	Universities	1,150	12	Flower preservation classes 180
7	Cub Scouts	62		Bonsai Fall & Spring Show Demonstration 214
4	Boy Scouts	53	16	Bonsai meetings 450
3	Girl Scouts	57	1	Garden members meeting 12
2	Camp Fire Girls	25	1	Annual Cactus Show 13,645
3	Brownies	50	5	Board Meetings 55
14	Private Schools	402		
6	Garden Clubs	110		
1	Church Group	15	Lectures were given to the following groups AWAY FROM THE GARDEN	
7	Conventions	347	7	Garden Clubs 328
2	Crash Programs	114	2	Lectures 300
1	Handicapped group	16	6	Field Trips 152
1	Herbarium dedication	110		

37th ANNUAL BOARD MEETING

(Continued from Page 65)

The plan was first presented to the Press and writers in the Valley who will be invited to attend a 'progressive dinner'. Our Board voted to invite the group (200-250) to the Garden June 1st for 'salad and sandwiches. The London Wax Museum will furnish 'refreshments', The Phoenix Zoo will have 'entrees' and Legend City will have 'cake and coffee.' Sounds like a 'blast' to get the P.A.C. in front of the public via various news media.

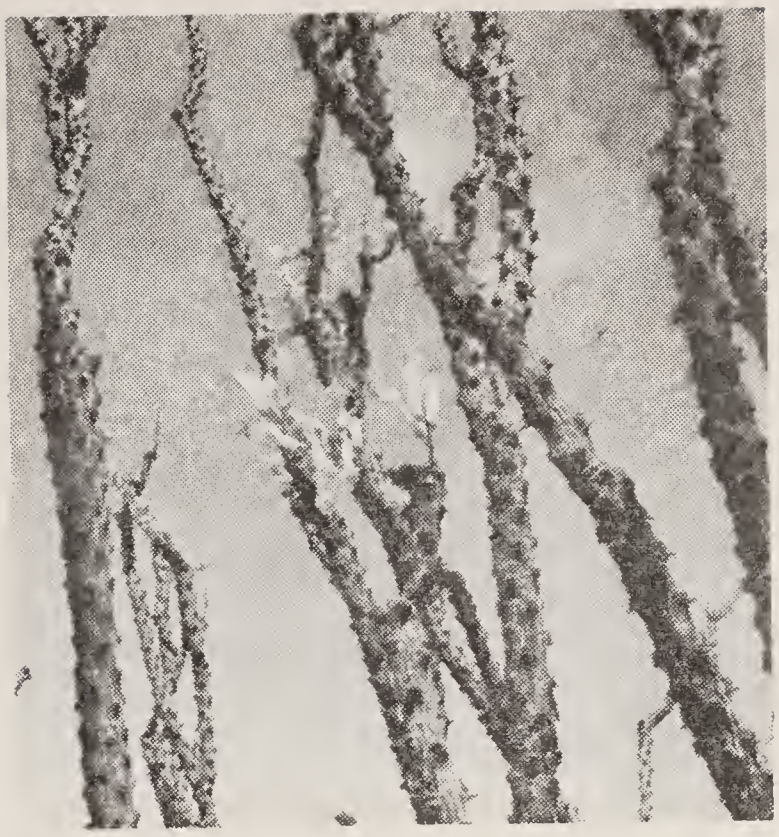
The P.A.C. is now printing 150,000 colored brochures for summer distribution and over 200,000 will be printed for the winter. This is a cooperative venture which will be of aid to all of us and should show a marked upsurge in attendance for Papago Park area.

RARE SEED AVAILABLE

We have been able to collect seed off of a rare White-flowering Ocotillo located in the northern part of Maricopa County, Arizona.

We are anxious for persons to germinate these seeds and grow them up to flowering size which would be 16-18 years. Mrs. Pat Moorten, Palm Springs, Calif. had white flowers from seed collected in Baja Calif with growth of sixteen years.

Send a stamped, self-addressed envelope at once to the Garden for your free fresh seed. Chas. Mieg, Scottsdale, Ariz. has been getting 100 percent germination. Hurry!



BOOK REVIEW

THE AGAVE FAMILY IN SONORA by Howard Scott Gentry, Agriculture Handbook No. 399, Agricultural Research Service, United States Department of Agriculture, March 1972. 195 pp., 73 photographs, 1 chart, 6 maps, 2 tables, 10 drawings.

This is the first comprehensive treatise on the Agaves and the other members of the Agave family; Yucca, Nolina, etc. of Sonora and adjacent areas since the first Agave was collected by Arthur Schott in 1855.

The author is to be commended for his diligent research. He has travelled for years in this part of Mexico to amass all the vital information compiled in this book.

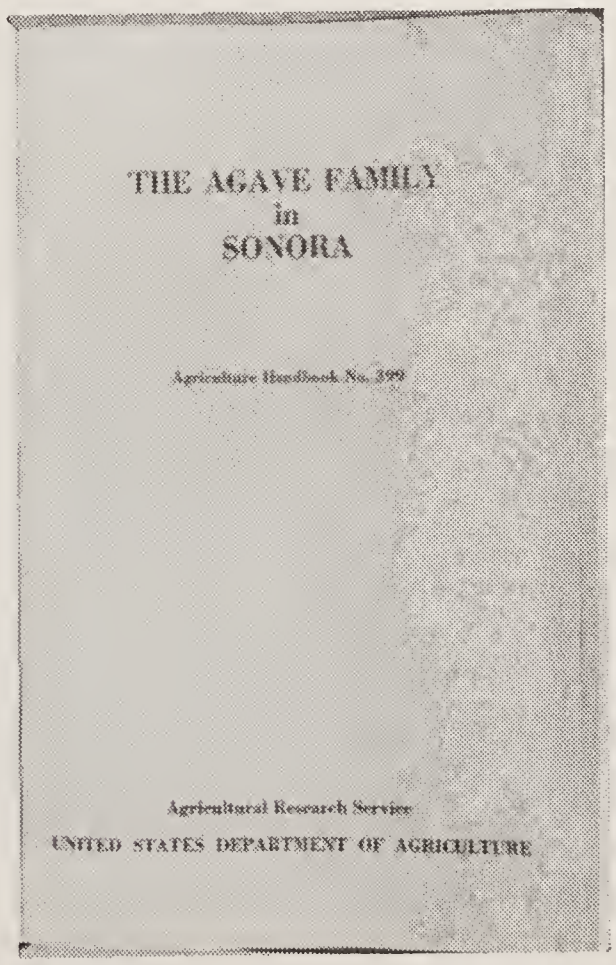
The layman, who usually find technical botany forbidding, will be particularly interested in the sections dealing with the Agave's animal or faunal associations, its uses by the inhabitants of Sonora, its characteristics and range.

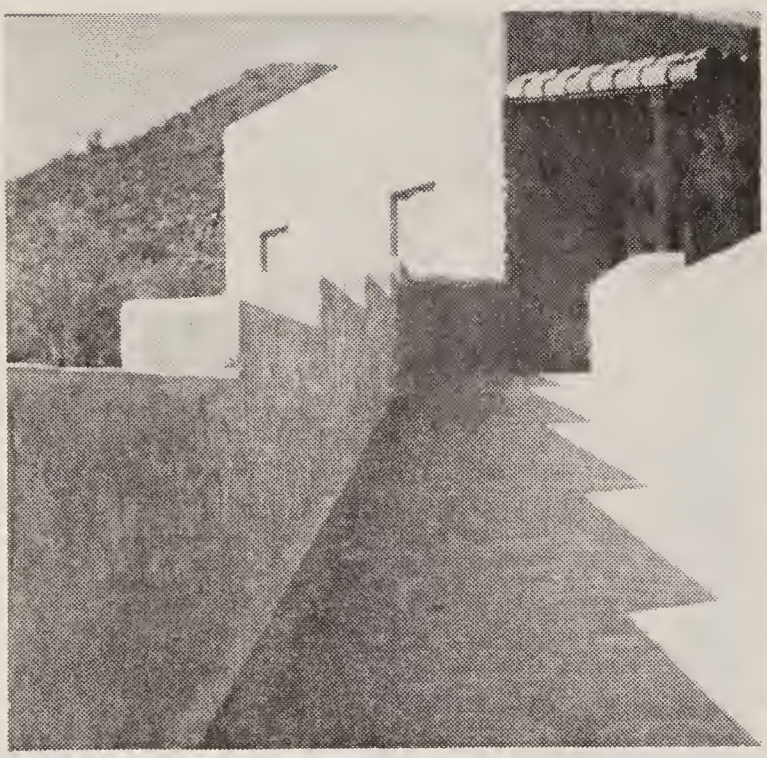
The botanist and researcher will appreciate the historical notes on authors and collectors of Agaves in Sonora, the keys to genus and species, distribution maps, floral ideographs, glossary and descriptions of ten new Agaves. A six-page table gives measurements of the flower either fresh, dried or pickled. Most of the seventy-three photographs are of Agaves in their natural habitat.

This book will be of great value to students, botanists, researchers and plant explorers. Its qualities reveal the author's ability and dedication. It sets a criterion for any future work in the field.

(Available in soft cover at the Desert Botanical Garden Bookstore for $1.60, includes handling and postage.)

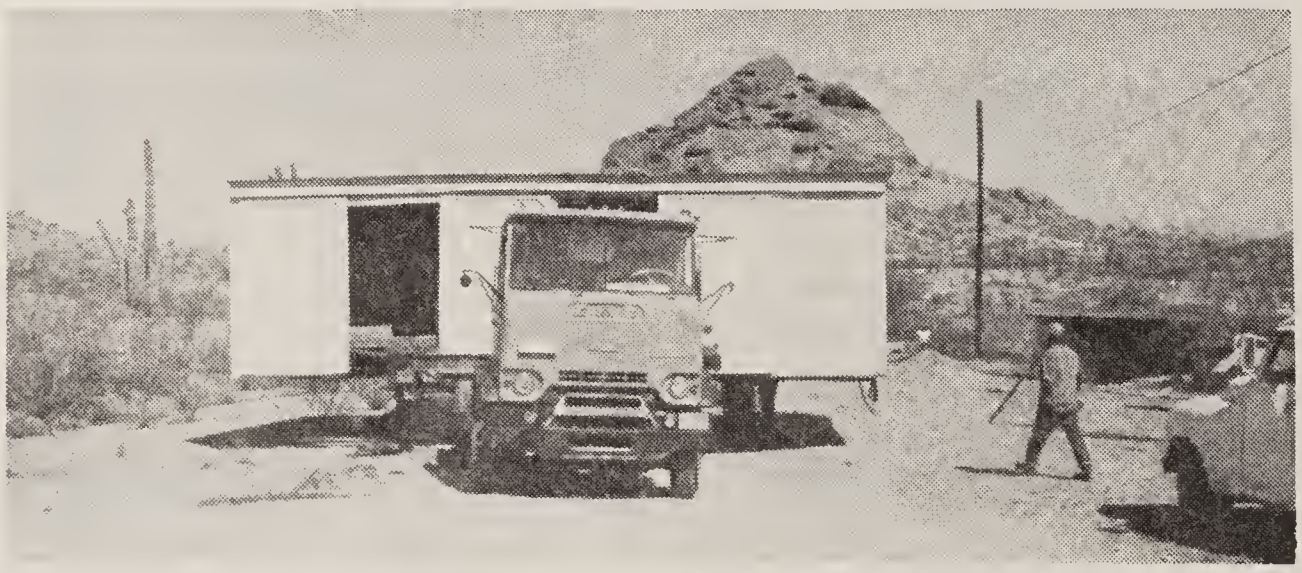
—WHE





Ramp from Garden into porch of Herbarium.

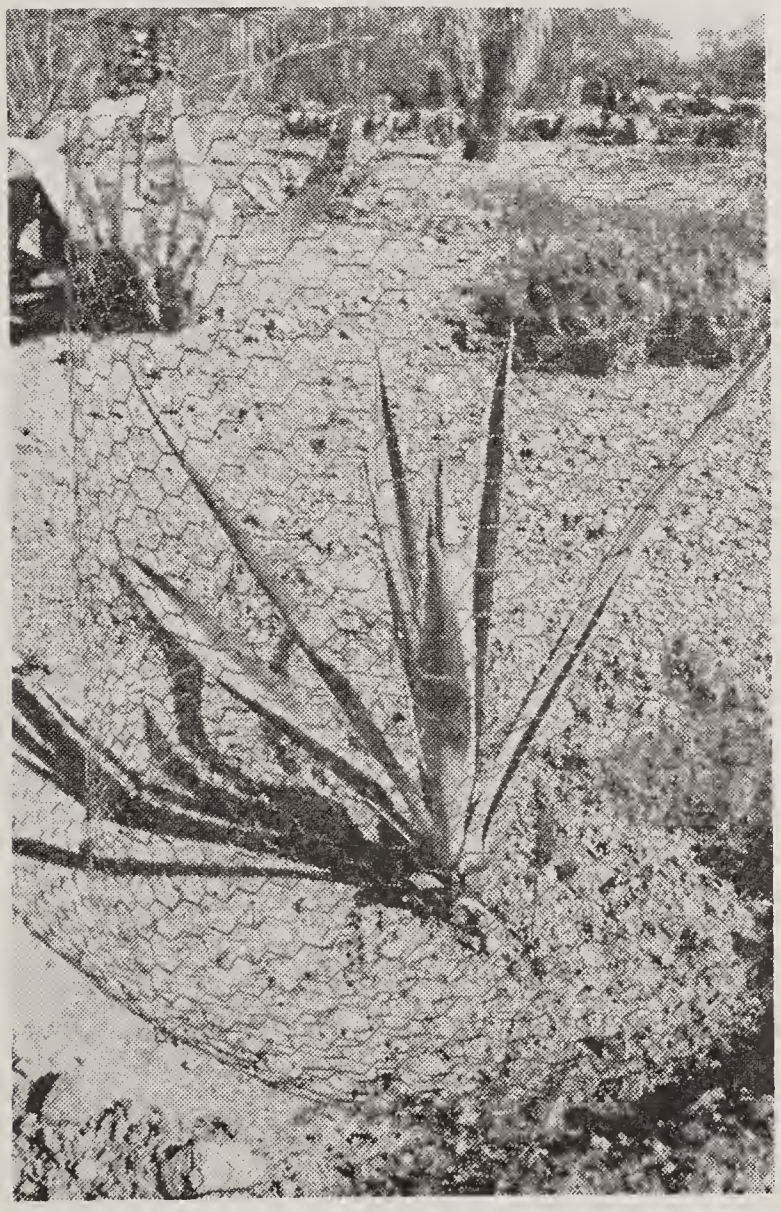
New Service Road constructed alongside of patio, ramp and Herbarium.



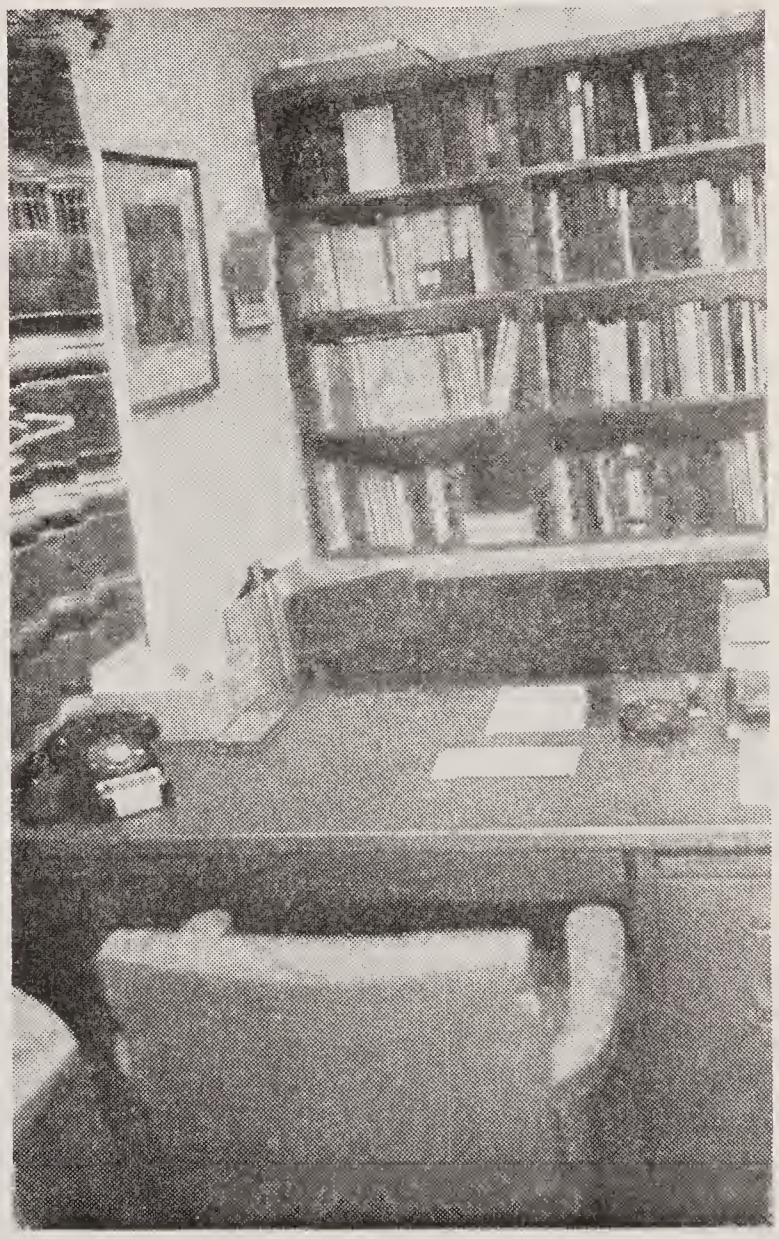
Moving the Shop and Storage building by truck from construction site of Herbarium

Shop and Storage building now located west of Archer House, the inflammable fluids building is shown on the left.

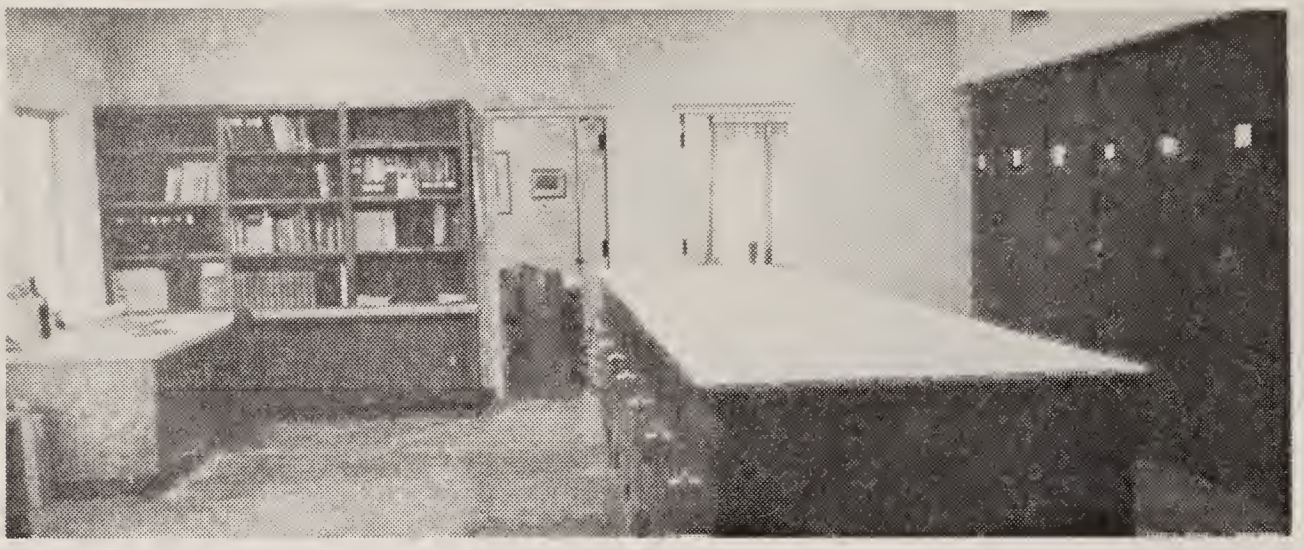
New bed of Star Cacti (*Astrophytums*) along the Nature Guide trail.



One of hundreds of Agaves being planted this summer and wired for protection against rodents.



Dr. Howard S. Gentry's office in Herbarium.



Interior view of Herbarium showing rows of herbarium cases, Emmett Klopfenstein library and entrances into offices.

Flower bed and wall between patio and porch before alteration.

New entrance thru wall between patio and porch showing the Helen Brinton iron gate. All photographs by W. H. Earle

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REG-MANNING

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Cover: "Donkey Tail," *Sedum morganianum* grown by M. C. Richter

Desert Botanical Garden of Arizona

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Editor's Notes

June 22nd and 23rd were chaotic days for people in the Phoenix area. Two tornadoes converged in Paradise Valley, ten miles north of the Garden, and ripped roofs off more than two hundred houses. Then followed an inch and a quarter of rain, and on the following morning an additional two inches of rain fell on Paradise Valley and the North Phoenix Mountains.

During the rains Paradise Valley was flooded. Rain and run-off water ran into the network of irrigation canals which, unable to hold all that deluge, broke banks at a number of places and flooded parts of Scottsdale and Phoenix for a day, forcing traffic to a standstill and totally isolating several large areas.

Losses from winds and water were first thought to amount to forty million dollars, but later estimates scaled the amount down to ten-to-fifteen million. That's still a lot of damage.

Many of the Garden members had their cactus collections flooded, but the water soon soaked into the ground, and after they gave their cacti a good hosing down to get the mud off, the plants revealed themselves as undamaged.

The real damage happened to leaf succulent gardens on hillsides, where sheets of water, avalanches of rocks and mud swept the gardens down the sides of the hill. Very few plants were recovered, and now the owners must begin their plantings again from scratch.

Rain gauges in the hills eight miles north of the Garden showed up to four inches of water during those two days, the Phoenix airport, eight miles southwest of the Garden showed one and three-quarters, the Garden's gauge showed only thirty-three hundredths of an inch.

We were lucky that we weren't flooded, but unlucky in the small amount of water we received — so we are still running three or four hoses a day to get supplemental water to our plants.

Many visitors to the Garden see the sprinklers in action and immediately say to us, "I thought cacti were NEVER watered." Of course, much of our watering is for non-cacti, and the cacti themselves are planted so close together that there is quite a bit of competition for rain water, so we water them through the summer. Fortunately, we have Phoenix city water. There are large storage tanks nearby and the City also has pumps, so there is enough pressure to run three or four hoses at a time.

We are quite busy this summer planting Agaves that were started from offsets or seed collected some years ago in the U.S. and Mexico. They have been growing in pots for eight to ten years and are now large enough to be set outdoors. Like our other leaf succulents, they will each be protected from rodents by fine-mesh wire cages.

The staff has been collecting fruits of the barrel cactus and saguaro to replenish our stock of seeds. We sell from fifty to a hundred pounds of cactus seeds a year to wholesalers, and that brings in a nice

(continued on page 83)

Arizona Cactus

BEEHIVE CACTUS
Coryphantha arizonica
Cactaceae

This beehive cactus is inconspicuous and well armed with "camouflage-colored" spines.

This is a small barrel-type cactus, three to four inches tall, that is rather inconspicuous because of its size and its vari-colored spines that blend with the color of the ground where the plant grows.

As this brownish-green plant matures, it will begin to send out offsets that in time give the cactus the appearance of a small mound.

C. arizonica does not grow in colonies. You may need to travel a mile or two on foot before you find another plant. It lives in the open grasslands, under small bushes, amongst junipers, small oaks and pines on sandy or rocky soil at elevations 4500 to 7000 feet.

The rose to pink flowers, two to two and a half inches in diameter, are borne at the apex of the plant. Petals are quite pointed at the tips, giving the flower the appearance of a many-pointed star, and the common name "Star Cactus Flower." Flowers appear in June and July, followed by large, juicy oval green berries, three-quarters inch long and three-eighths inch wide. Fruit is acrid-tasting and filled with brown seeds.

C. arizonica is a generously spined plant, having five to seven stiff brown-to-red central spines, mostly ascending, and merging with the 20-30 light-colored radials. Care should be exercised in handling this cactus because of its needle-like spines.

This plant is found in many cactus collections, but since it comes from a higher elevation than our low-desert natives, it should be planted in the shade in Phoenix and other low hot gardens.
Type Locality: Northern Arizona.
Distribution: Pinal Mtns. at Globe, Arizona, northward to and spreading along the Mogollon Rim escarpment, then up to Utah, Nevada and New Mexico.
References:
Benson, Cacti of Arizona
Earle, Cacti of the Southwest

You owe us 36½ cents for every copy of the Bulletin — if you have not sent us notice of your change of address. Well, we will not try to collect it from you, but you do cost that much each time for the original postage, postage due on returned copy, copy re-sent with corrected address plus 8 cents postage and clerical work involved. So, please let us know four to six weeks in advance when you plan to move or go on a vacation.

MAMMILLARIA MIEGIANA Earle spec. nova

W. H. Earle

Corpus subglobosum, usque ad 16 cm altum et 10 cm latum, prasinum, laticiferum, tuberculis in seriebus 13 et 22 spiraliter ordinatis, quadrangularibus, 12 mm longis, axillis juventute albolanatis. Areolae ovales, 1½ mm longae, 1 mm latae, spinis centralibus 2, porrecta et adscendenti, bulbosis, brunneis, 7-8 mm longis, radialibus 10-18, patentibus, griseo-albis, 8-9 mm longis. Flores campanulati, coccinei, 20 mm longi, 25 mm lati. Fructus clavatus, cerasinus, 25 mm longus, 10 mm crassus, seminibus 90-125, porphyreis. Species **M. johnstonii** et **M. standleyi** similis est, sed in illa corpus spinis minus dense tectum, in hac lana axillaris persistentior, et in ambobus flores rosei usque rubri, fructus pallidior, seminumque 12-35 brunnea sunt.*

DESCRIPTION: Stems usually solitary, cylindrical, globose, slightly depressed apex, forest green, 16 cm. high, 10 cm. wide, texture firm. **Tubercles** 13-17 spirals, forest green, 12 mm. long, four-angled to tip, milky sap. **Areoles** oval, 1 x 1.5 mm. **Axils** bearing white wool in young growth of plant, wool scant or lacking in mature portion of plant. **Central spines** usually 2, 7 to 8 mm. long, smooth bulbous at base, upper central ascending, lower porrect, brown. **Radial spines** 10-11, 8 to 9 mm. long, spreading, gray-white imparting a whitish appearance to the plant. **Flowers** funnelform, in a ring at apex, 20 mm. long and 25 mm. wide. Outer perianth segments brownish-red shading off to a reddish-pink, tip obtuse, margins smooth. Inner perianth segments scarlet, midrib bordered with pink, petals linear-lanceolate, tip sharp. Filaments dark rose, anthers deep yellow, style lemon yellow, stigma lobes 5, yellow below anthers. **Fruit** cherry red, clavate, 10 x 25 mm., perianth persisting, rising from axils filled with white wool. **Seeds** reddish-brown, obovate with projecting hilum, 5 x 1 mm., 90-125 to a fruit. **Roots** fibrous.

TYPE LOCALITY: 14 kilometers west of Moctezuma, Sonora, Mexico.

DISTRIBUTION: Between Rio Sonora and Rio Moctezuma on plateaus north of Ures, Sonora. Elevation 470 meters. Among rocky hills, browse shrubs and grasses, sabal palm and oak trees.

HOLOTYPE: DES 6500 deposited at the Herbarium of the Desert Botanical Garden. Topotype sent to Universidad Nacional de Mexico.

This large ball-shaped mammillaria was first found in 1953 near Ures, Sonora, by Dudley Gold, then accountant for the Phelps Dodge mines at Cananea, Sonora. He sent specimens to W. Taylor Marshall of the Desert Botanical Garden, Phoenix, Arizona, and to Dr. Helia Bravo H., Universidad de Mexico, Mexico City, for identification. Specimens received at Phoenix died.

While I was visiting Dr. Bravo in 1958, she gave me one of the specimens collected by Dudley Gold. The plant had never flowered in Mexico City because of the higher elevation. Dr. Bravo asked me, if we were successful in getting flowers and fruit, to describe the plant. It flowered for us in 1960, as shown on page 79, but did not set fruit that year. In later years it has both flowered and set fruit, and during those years I have also collected several more of the plants.

I extend my appreciation to Charles Glass and Bob Foster who have in recent years also found the plant in its natural habitat, but have refrained from describing it because of my prior commitment to Dr. Bravo.

It is with great pleasure that I name this plant in honor of Charles E. Mieg, Scottsdale, Arizona, who has led many plant exploration trips through the greater part of Mexico. He has been an outstanding collector, and has discovered quite a few new species of cacti, which he turned over to various botanists who then described the plants without ever using the discoverer's name for a species.

***Thanks are extended to Dr. Reid Moran of the San Diego Society of Natural History for his Latin description.**

	Mam. miegiana	Mam. johnsonii	Mam. stanleyi
BODY	Globose, 16 cm high, 10 cm. wide, apex slightly depressed, forest green.	Globose, 15-20 cm. high, occasionally cespitose from base, slightly shrunken apex.	Simple to cespitose, in clumps 1m. wide, individual heads globose to 15cm. wide, sunken apex.
TUBERCLES	13-22 spirals, forest green, 12mm. long, 4-angled, 7mm. at base, with milky sap.	13-21 spirals, dull bluish-green, 10-13 mm. long, 4-angled to tip, with milky sap. 6-9mm. at base.	13-21 spirals, firm glossy green, keeled ventrally, with milky sap, 9mm. long, 7-8mm. wide at base.
AREOLES	Oval 1 x 1.5mm.	Round to oval, scant wool in youngest.	Oval, with dense white wool in youth, soon becoming naked.
AXILS	Bearing white wool in new growth, scant or lacking in older portion of plant.	Scant white wool but no bristles.	Bearing white bristles and dense white wool in flowering and fruiting areas.
CENTRAL SPINES	Usually 2, 7-8mm. long, bulbose, smooth, stiff, upper central ascending, lower porrect, brown.	Usually 1, sometimes 4-6, 10-25mm. long, subulate, smooth, stiff, light purple to black, divergent, erect.	4, 6-8mm. long, lower longest, all straight, acicular, reddish-brown, divergent, porrect.
RADIAL SPINES	10-11 at 8-9mm. long, gray-white, spreading.	10-18, 6-9mm. long, upper shorter, acicular, stiff, smooth, white to horn-color and reddish-brown to black tips, ascending.	16-18, 4-8mm. long, upper shortest, all acicular, semiflexuous, white with dark tips, ascending.
FLOWER	Campanulate, in a ring at apex, 20mm. long, 25 mm. wide. Outer perianth segments brownish-red shading off to reddish-pink, margins smooth. Inner perianth segments scarlet, midrib bordered with pink, petals linear-lanceolate, tip sharp. Filaments dark rose, anthers deep yellow, style lemon yellow, stigma lobes 5, yellow below anthers.	Campanulate, 15-20mm. long and wide. Outer perianth segments reddish to purplish-brown, tapering midstripe bordered with pale cream, tip acute to obtuse. Inner perianth segments pink to brownish midline to midstripe, white to cream margins, linear-lanceolate, 1.5-2.5mm. wide, tip acuminate. Filaments pink above, cream below, Anthers bright yellow, style brownish-pink to sometimes green. Stigma lobes 6-7 olive green 2mm. long, overtop anthers.	Funnelform, 12mm. wide, outer perianth segments reddish purple margin. Inner perianth segments purplish-pink, tip obtuse. Filaments pale purplish. Stigma lobes 3, light green, 1mm. long, overtop anthers.
FRUIT	Cherry-red, clavate, perianth persisting, 10x25mm. arising in a circle near apex amidst white wool.	Red to scarlet, clavate, 8x25mm. with persistant perianth.	Scarlet, clavate, 12-16 mm. long with dried perianth persisting.
SEED	Reddish-brown, 0.5x1mm. obovate with projecting hilum, 90-125 seeds to a fruit.	Dull light brown curved pyriform with lateral hilum, reticulate, 0.6x1.2mm.	Brownish.
ROOTS	Swollen and fibrous.	Fibrous.	Fibrous.
TYPE LOCALITY	Moctezuma, Son.	Sonora, Mex. 288 km. from Moctezuma.	Sierra de Alamos, Son. 520 km. from Moctezuma.
DISTRIBUTION	Between Rio Sonora and Rio Moctezuma on high plateaus north of Ures, Son. (East of Hermosillo)	San Carlos Bay along the coast to Guaymas, Son.	Along the coast.
ELEVATION	470 metres.	Slightly above sea level.	150 metres.

MAMMILLARIA MIEGIANA sp. nov.

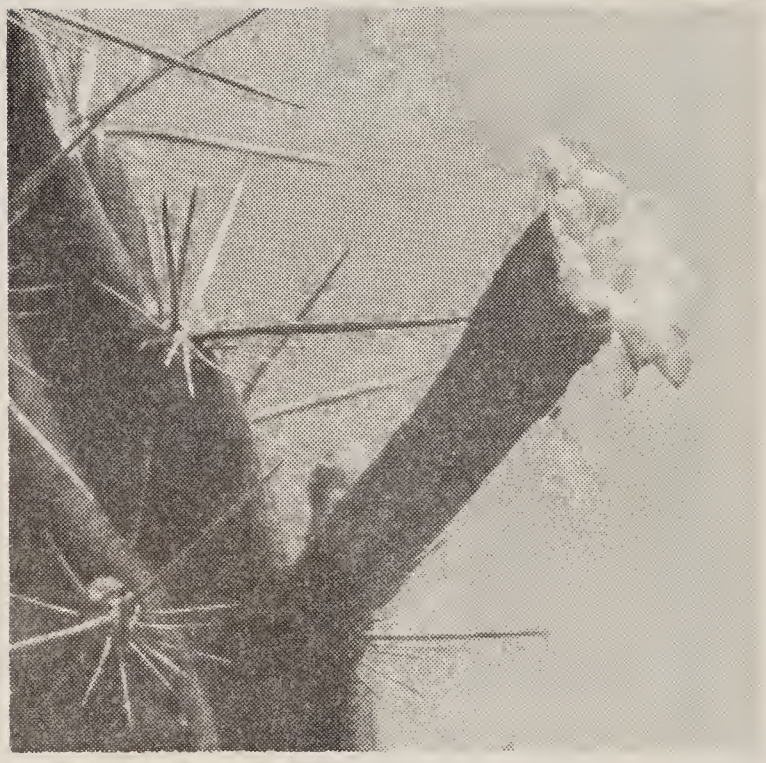
This post card, first printed several years ago and labelled "twin pincushion" by the printer, gives us the unusual opportunity to illustrate **M. miegiana** in full color. The double-headed specimen, photographed here at the Garden, is less common than the single-headed or solitary plant. (See p. 84)

Mexican Cactus

OCTOPUS CACTUS
Rathbunia alamosensis
Cactaceae

This is a spectacular plant when seen in its native habitat growing in clumps twenty-six feet in diameter. The arching stems grow to six or eight feet before they curve down to the ground, and where the stem touches the ground at or near the tip it puts out roots and starts a new plant.

R. alamosensis (Coulter) B&R was first described as **Cereus alamosensis** by Coulter in Contributions to U. S. Nat. Herbarium, 1896. Then Runge in Schumann's Monatsschr. Kakteen, 1901 named it **Cereus sonorensis.** Britton & Rose in Contributions to U.S. National Herbarium set it in a new genus, **Rathbunia alamosensis.** The genus is named for Dr. Richard Rathbun, Asst. Secretary of the Smithsonian Institution, in charge of the U. S. National Museum, who was a well-known authority on invertebrates.



Two-inch Rathbunia flower. (Reds look almost white in B&W photos).

A medium-sized "Octopus" — eight feet across and not quite four and a half feet high — at the Garden. Frost has burned some branches.

The columnar green stems, one and a half to two inches in diameter, reach six to eight feet high and then gracefully bend down to the ground. The stem has four to eight prominent ribs bearing awl-shaped central spines one to four inches long and eleven to eighteen white radials, creating a formidable armament against anyone wishing to handle a stem.

The scarlet tubular flower, one and a half to two inches long, is followed by a brilliant scarlet globose fruit, three-quarters of an inch to an inch and a half in diameter. The fruit has a delicious white pulp containing only a few black seeds.

This plant was discovered at Alamos, Sonora, Mexico. It is also found in the states of Sinaloa, Nayrit and Colima. Inhabitants of these regions refer to the plant as "sina" or "cina."

It grows in lowlands and foothills, forming large rings or circles, while the inner and oldest plants have died out in the center. The alluvial soil in which Octopus Cactus grows is found in the Thorn-forest and Short-tree-forest areas from five hundred to fifteen hundred feet above sea level.

Frost will "burn" the growing tips of this plant, and cold weather causes the south side of stems to turn red. Stems can be easily rooted in the summer and can be trained up to make a tall plant, but Octopus Cactus is happier if it has an area twenty feet across for its needed leg room.

Type Locality: Alamos, Sonora.

Distribution: Southern Sonora, Sinaloa, Nayarit, Colima.

References:
Britton & Rose, Cactaceae
Gentry, Rio Mayo Plants

—WHE

This close-up of the fruit of *Rathbunia alamosensis* shows the shriveled flower and the ripening fruit as well as the formidable spines.

GIANT BUR-SAGE
Franseria ambrosioides Cav.
Compositae
Sunflower Family

Franseria ambrosioides is a perennial sub-shrub or shrub, woody at the base and herbaceous above. In height it ranges from 1 to 1.5 meters (3.3 to 5 ft.). Branches are reddish-brown to green, glandular, and with conspicuous white hairs. Stems are viscid to the touch. Leaves are simple, alternate in position, and lanceolate in shape. These are three to five times as long as wide, measuring 5 to 12 cm. long and 1 to 3 cm. broad. Leaf surfaces are green and the net-like veins are prominent on the lower surfaces. Leaves are thick, coarsely toothed, and have short, harsh hairs on both surfaces. Apex of the leaf is gradually tapered and the base is broad-cordate. Petiole is slender, 2.5 cm. and longer. Flowering may extend from February through May. Flowers are unisexual, but both sexes are present on the same plant. The simple or branched racemes are numerous and in terminal and axillary positions. Staminate flowering heads are in terminal spikes, and the three-flowered pistillate heads are in short lateral spikes. The golden-yellow to brown fruits are bur-like and from 10 to 15 mm. long. These bear numerous, slender, awl-shaped spines that are slightly flattened above. The spines are 2 to 3 mm. long and are hooked or coiled at the tips. Fruit is glandular throughout, including the spines. Seed is brownish-black to black, shiny, and finely striate. It is fusiform, being broadest at the middle and tapering to both ends. One surface is convex, the other barely concave. It measures 4 to 5 mm. long and 2 mm. broad and there is a short beak at one end.

Leaves are long, thin-tipped triangles, drooping and tending to fold.

Giant Bur-Sage is common to abundant in the Lower Sonoran Zone and occasionally up to 1372 meters (4,500 ft.). It grows mainly in canyon bottoms and washes on rocky or gravelly soils. Distribution extends from southern Arizona into southern California and in northwestern Mexico; Sonora, Sinaloa, Durango, and Baja California. In Arizona it ranges south and east from southern Yavapai and Mohave counties into Maricopa, western Gila, Graham, Pinal, Pima, and Yuma counties.

Franseria ambrosioides has value in providing cover for ground-nesting birds such as quail and for stream bed erosion control. It has little or no forage value and little evidence is seen of browsing by livestock or game. As for a desert landscape item, it again has little value, for it

This *F. ambrosioides* bush in our Garden measured four feet by three feet and is about two and a half feet high.

is leafless during periods of extended drought and during cold winters. Flowers are insignificant and the bur fruits are a nuisance.

REFERENCE:

Benson and Darrow, The Trees and Shrubs of the Southwestern Deserts
Kearney and Peebles, Arizona Flora
Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert
Standley, Paul C., Trees and Shrubs of Mexico

—JHW

Shown here: Burs and also white hairs covering stems and leaves.

EDITOR'S NOTES

(continued from p. 75)

income which can be used for other Garden activities. I think you would be interested to know that the Garden has sold over 800 pounds of cactus seed since 1960, and that adds up to millions of seeds. In fact, somewhat over two hundred million seeds. Some years ago a member of the staff actually counted the number of seeds in one-half ounce. By multiplying the totals by thirty-two we found out that saguaro seeds run 328,192 per pound, **Ferocactus wislizeni** 209,680 per pound, and **Ferocactus thurberi** 309,248 per pound. (If you don't believe us, count and weigh the cactus seeds yourself!)

Photo of the usual solitary form of *Mammillaria miegiana* showing spiral arrangement of tubercles, whitish radials. Height is 6.3 inches.

CHESTER C. PIDGEON

Mr. Pidgeon, a valued friend and member of our Garden, died on August 4th at the age of ninety. His great age was not apparent, as members of "Cactomaniacs" who saw him at our last meeting in June will tell you, but ninety years seem too few to encompass all his achievements, activities and interests.

He was a school principal in Fort Mohave and Leupp, Arizona, and later in Pipestone, Minnesota, all Indian schools. During those years he learned so much about Indian rugs and baskets that he became known as an expert on those crafts. After he and Mrs. Pidgeon moved to Phoenix, he became a member of the Garden in 1948, and was one of the first "Cactomaniacs" when a group of cactus fanciers formed that informal group in 1950. A very active Garden member, he exhibited plants at our annual Cactus Shows, joined the Garden's staff on field trips, grew cactus in his own garden where he specialized in native Arizona cactus and, when he moved some years ago to a retirement apartment at Orangewood in Phoenix, gave the Garden his best speciment plants. Having finally divested himself of his cactus garden, he immediately began a new one at Orangewood!

With the approval of Mr. Pidgeon's sons and daughters, a memorial fund has been established here at the Garden for the purpose of building a students' entrance so that traffic will move more freely when busloads of youngsters visit the Garden. The Pidgeon family thinks this an appropriate plan, since it is connected with two of Mr. Pidgeon's interests — school children and cactus.

ACTIVITIES

Things at the Garden get going when the desert starts to cool off. You'll get your list of the '72-'73 activities with your next issue of the Bulletin. In the meanwhile, here are three early-fall happenings:

Bonsai Society, 7 p.m. September 26.

Cactomaniacs' potluck supper, 6:30 on October 3.

Field Trip to the White Tank Mtns., meeting at the Garden at 8:30 a.m., October 14.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI October, 1972 No. 8

REG MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

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Desert Botanical Garden of Arizona

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Editor's Notes

A **N.S.F. Grant** of $34,600 for a three year scientific study for the support of the project entitled "Monograph of the Genus Agave" has been awarded to the Desert Botanical Garden by the National Science Foundation from Washington. D.C.

This is certainly a giant stride for the Garden in its program of research and it will be supervised by our Research Boatnist Dr. Howard S. Gentry who was in great part responsible for acquiring the project for the Garden.

He is already planning a six week trip into the Mexican states of Chihuahua, Coahuila and Durango from Sept 21 to Oct 31 to collect material from the Agaves in those area. This project will eventually entail collecting in Mexico, Central America and South American along with the regular work of mounting and the classifying of specimens.

We are assured that another grant will be forthcoming in 1976 for the study of Agaves in the European herbaria, then all the findings will be compiled into a monograph in 1977 to complete the project.

Dr. Gentry is the author of a recent publication "The Agave Family in Sonora" published by the Government Printing Office last April. It has been reported as being sold out, but we have copies of it in our Bookstore at $1.50.

The Garden is most unfortunate to lose its most capable office secretary **Barbara Worbington** who is leaving Sept. 30th to 'keep house.' She has done a terrific job in the office which has grown very fast in her four year with us. She never hesitated to answer all questions hurled at her and so often went out of her way to help those needing assistance. Come out to the Oct. 'Pot-luck' and wish her well. She will be sorely missed — but blessings on her and her home.

We have a permanent addition to our staff in the person of **Rodney Engard** who as an A.S.U. student worked week-ends and school holidays at the Garden. He graduated for A.S.U. in 1970 but continued to accumulate courses towards a Master's degree. He wished to remain out of school this academic year so we put him on the permanent staff so that he could accompany Dr. Gentry on his trips into Mexico and do part time work in the Herbarium.

Our volunteer Librarian, **Eleanor Radke**, Cave Creek, Ariz. had to leave us for a short time to aid her husband in his new business. We will certainly miss her for she has done a terrific job in organizing and arranging our fine Library under the Dewey Decimal System. Our sincerest appreciation and thanks go to Eleanor. Peg Gill, Apache Junction, Ariz. is doing a competent job in continuing Eleanor's job.

Enclosed with the Bulletin is your 1972-73 **PROGRAM OF ACTIVITIES** conducted at the Garden. Hang it in a convenient place and refer to it for classes, lectures, meetings, etc. It will be of great help for unexpected or winter guests. Please note that the monthly Field Trips will again be held under the direction of Harry Lehr, Rodney Engard or your Editor. Participants will meet at the Visitors' Centre parking lot, leave at 8:30 A.M. and be back

to the Garden at 4:15 P.M. Several new lectures have been added to the winter program for Thursdays. Diplomas will be given to those who complete the six classes on a "Better Understanding of Desert Plants" held each Wed. at 3 to 4:15 P.M. this winter.

The death of **Mr. C. C. Pidgeon**, a member of the Garden and Cactomaniacs, was reported in last month's Bulletin. His relatives asked us to move his cactus garden from Orangewood Retirement Estates to our Garden. There were hundreds of fine plants that are being planted in various parts of the Garden to emphasize certain genera.

It will be of interest to you to know that 25 of his plants are being used to set off a Hohokam Indian exhibit at the Heard Museum from Sept. 15th to Nov. 19th. Do try and see it and all the other fine exhibits on display.

Barbara Worbington who has been a main cog in our Garden staff

We feel that Mr. Pidgeon would approve of his showing of his plants as he had worked with the Arizona Indians since 1905 in schools on the Reservations.

Also, another showing of 25 of his plants are on display in the corridor of the Virgil I. Bailey Elementary School in East Gary, Ind. as an educational exhibit. Mr. Pidgeon was very familiar with this area as it was not too far north of where he was born. His efforts and plants will continue to live for him.

As our season begins to get into high gear we will need more **VOLUNTEERS** to help our small Staff at the Garden. You may volunteer for a day or half a day, to help in the Bookstore, as a Guide on the paths to answer innumerable questions by our alert inquiring visitors, making display signs or exhibit cards, helping in the office, cleaning and packaging seed, helping in the Garden, and many other tasks. Phone the office and tell us when you would like to volunteer your time. Thanks!

Barring rain or high winds, plan a **fall trip** right away into the high country and mountains at least between Oct. 1st and 10th to see the terrific wildflowers that should begin to taper off as the trees begin to 'dress-up" in their fall colors.

Flaming maple trees should be seen from Wind Cave campground and upwards to the head of Oak Creek Canyon. Yellow and red sumacs, gold to brown oak trees, are bunched amongst the pine trees on the way to Flagstaff, yellow, golden-to-red aspen trees will be trembling with the slightest breeze as you continue northwest out of Flagstaff on Highway 180.

A trip through Payson, Christopher Creek, Heber and Mogollon Rim will give you a lot of color. If you continue to Snowflake and Showlow you should then go to McNary, Greer, and for a super trip down the Coronado Trail to Morenci and Clifton. A trip up the Swift Trail on Mt. Graham south of Safford gets you quickly into the sky and the vistas and colors are memorable.

Mexican Cactus

CARDON
Neobuxaumia
macrocephalus
Cactaceae
Cactus Family

As you travel through the Tehuacan valley which is about 280 Kilometers southeast of Mexico City you are greatly impressed with the vast numbers of species of cacti packed into this rolling valley which is studded with giant barrels (**Echinocactus ingens**), tall slender sky piercing **Cephalocereus hoppenstedtii,** clusters of slender organ pipes with enormous fruits (**Lemaireocerus hollianus**), cardons (**Neobuxbaumia macrocephalus**) who command an entire hillside with their slender to heavy branched forms.

Neobuxbaumia (named by Curt Backerberg in honor of Dr. Franz Buxbaum of Austria) **macrocephalus** (long head) is a gigantic cactus up to 16 meters in height, with a very tough woody trunk 6 dm. in diameter. It can be a solitary stemmed plant, but most often as it ages it will develop many arms, making it a much-branched plant.

It is a night blooming cereus having small white flowers arising from a pseudocephalium at the apex of the plant. The flower petals are short and rounded.

The plant has a pale green body with 20-24 ribs formed by small shallow tubercles out of which are a few centrals about 6 cm. long, and surrounded by 12 spreading short radial spines.

Type locality, Tehuacan, Mexico
Distribution, Southern part of state of Puebla, Mexico

——WHE

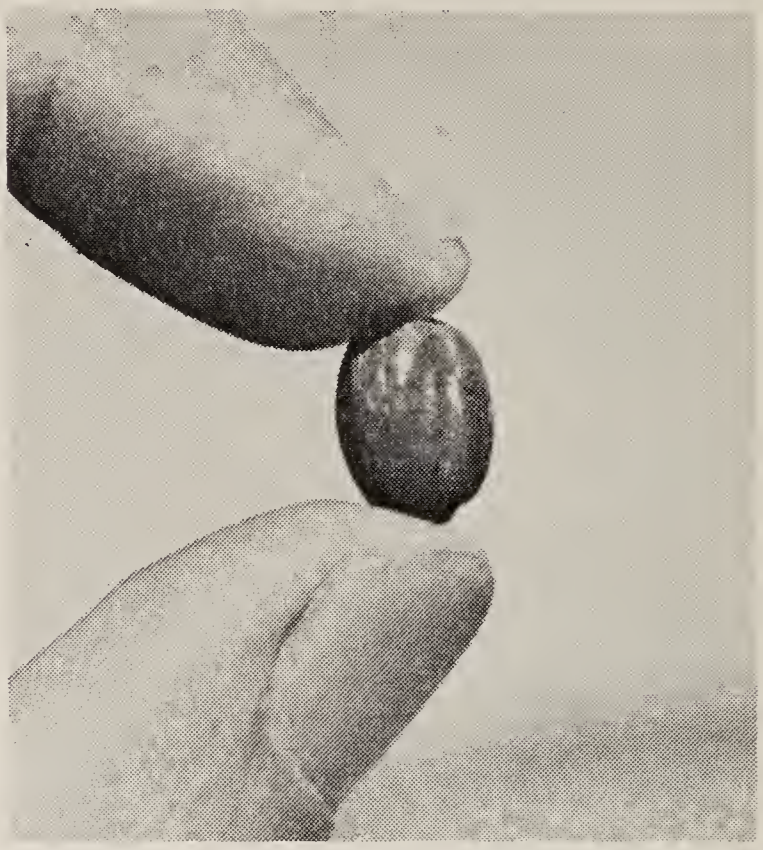
A thirty foot 'cardon' of the Tehuacan valley. Many will grow up to fifty feet high.

REPORT ON THE JOJOBA PROJECT

Since the story "Plant a Seed and save a Whale" by Dr. Howard S. Gentry, in the April 1972 issue of the Saguaroland Bulletin, you may have wondered "What happened?"

The story was carried, and is still being used, in several national magazines and science bulletins of various biological organizations.

An international committee on Jojoba Research Development was held at the University of Arizona June 1st and 2nd which several of our staff members attended. Chairman was Dr. W. G. McGinnies of the Arid Land Studies, Tucson.



A three quarter inch seed of the Jojoba.

A one inch capsule splitting open showing the fruit. As yet nobody has claimed the reward for a two inch capsule.

A meeting was held in April with the Office of Economic Opportunity at Redlands, Calif. and representatives from 20 Indian Councils were in attendance. The O.E.O. is most interested in creating projects in which the Indians can participate and realize some monetary return. Other meetings with various groups have been held and the Indians assured the O.E.O. that they could obtain the fruit.

Harvest was started by the San Carlos Apache Tribal Council on the Apache Reservation and we recently learned that they had collected over 70,000 pounds of Jojoba nuts. Indians in California expected to gather about 30,000 pounds, all this totaling about 100,000 pounds or 50 tons which will be processed at a facility in Colton, Calif.

The available jojoba liquid wax will then be available for research and development projects. It is hoped that it will then supplement the sperm whale oil that has been used for many years in high speed motors and machinery.

ASPECTS OF THE DESERT

Monument Valley, in northern Arizona, is a Navajo Tribal Park that is spotted with 'mittens,' that are capped with a hard sedimentary stone that formed the bottom of a lake millions of years ago. Incessant wind and water erosion has caused the softer stone to be worn away resulting in the present day red sandstone desert floor with its inspiring stone monoliths.

Arizona Wildflower

SHAGGY-TOP
Hymenothrix wrightii
Compositae
Sunflower Family

Plant of *Hymenothrix wrightii* which we think should be referred to as 'Shaggy-top'.

Few things are more frustrating than driving along a highway and taking part in the following dialogue: "There's another of those white flowers." "Where?" "We just passed it—here's another one." "Where?" "Right there." "I can't see it." "Right There In Front Of YOU." (long pause) "Oh."

Of the two gentlemen connected with the Garden who were the actors in this particular situation, the driver is more to be pitied than the passenger. After all, he **should** keep his eyes on the traffic. Fortunately, he pulled off the Black Canyon Highway at Sunset Point, a few miles south of Cordes Junction, and finally saw and photographed those white flowers, **Hymenothrix wrightii.**

Shaggy-Top is a white-flowered (occasionally purplish) member of the Composite Family. It is a slender annual or perennial eighteen to twenty inches high, with a wide, branching form and relatively small leaves. The heads are numerous, and since each Composite head is made up of a very great number of individual flowers, the total number of flowers on only one plant is pretty high.

Flowers of *Hymenothrix wrightii* that are borne in culsters.

The plant is slightly pubescent, leaves, leaf stalks and stems bearing small hairs. The sparse alternate leaves are finely divided into narrow segments and are about an inch long.

The heads, though technically discoid, look higher and shaggier than most of the daisy-aster-sunflower composites because the uneven lobes of each separate corolla

are several times longer than the very short throat. At first look **H. wrightii** resembles Chaenactis, the Pincushion Flower.

The pictures shown here were photographed early in May, though flowering season is usually given as June-November.

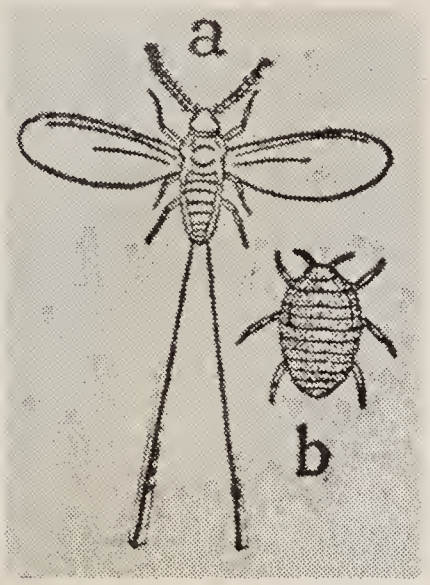
Shaggy-Top is found from New Mexico to Southern California and Mexico. In Arizona it grows in Greenlee, southern Navajo, northern Yavapai and eastern Mohave Counties south to Cochise, Santa Cruz and Pima Counties at 4000-8000 ft. elevations, mostly in scrub oak and pine belts.

REFERENCES:

Kearney & Peebles, Arizona Flora
Rickett, Wild Flowers of the United States, Vol. IV

——LD

COCHINEAL



Cochineal Insect
a. male (8X)
b. female (10X)

Cochineal is a red dye derived from the body of a female insect **Dactylopius coccus** Costa that created a flourishing industry in Mexico during the 1800's when millions of pounds were being shipped out of the country to be used to dye fabrics, used in paints, preparation of medicine, coloring of food products, etc.

The light powdery covered insects were carried to other warm countries and carefully raised for their dye which was most important to the commerical world.

The insects had been cultivated during the reigns of the Aztec kings and the invasion of the Toltec tribes long before the pre-Columbian era. It is noted that the Confederation of the Valley of Mexico exacted tribute of cochineal from subordinate tribes, many of whom had plantations of 50-60,000 Nopal cactus plants that were farmed by the poorer Indians.

The excessive demands became so strong on the natives that they began to destroy their groves of cactus plants so as not to become enslaved by higher powers.

This insect is not to be confused with **Dactylopius confusus** Cockerell, (California cochineal scale) which will be discussed in next month's Bulletin.

Dactylopius coccus is an insect of the family **Coccidae** of the order **Hemiptera.** The male is one half the size of the female, has no nutritive apparatus, bears long white wings and has a deep-red-colored body and is found in a proportion of one male to 150-200 females. The female is wingless, has a dark-brown plano-convex body. The dead body of the mother insect serves as a protection to the eggs until hatched. The insects are carefully brushed off the cactus pads into bags which are immersed in hot water or exposed to the heat of the sun or an oven. The best crop is the first of the season which consists of unimpregnated females. Cochineal owes its tinctorial power to the presence of a substance termed cochinealin or carmic acid. The natural dye of the Cochineal insect is used for the production of scarlet, crimson, orange and other tints and for the preparation of lake and carmin.

The introduction of aniline dyes in the early 1900's spelled doom for the cochineal which recently shows strong signs of recovery.

——WHE

Arizona Cactus

COB CACTUS
Escobaria tuberculosa

Cactaceae
Cactus Family

This elusive plant had been reported as found in Cochise County, Ariz. by Hester who named it **Escobaria arizonica**, nom. nud., as being found north of Portal. The April 1953 issue of Saguaroland Bulletin suggested that our members search for this plant. The Dec. 1958 issue of the Saguaroland Bulletin shows a photo of three **Escobaria tuberculosa** plants found by Mrs. Monnie Speck of Phoenix in 1957, who was accompanied by Mrs. Flo Fickeisen and Wayne Thompson. Very few persons have found this plant in Arizona but it is plentiful through New Mexico, Texas and southward into central Mexico.

The plant has had a wide range of names some of them being: **Mammillaria strobiliformis** by Scheer in 1849, **Echinocactus strobiliformis** by Poselger 1853, **Mamillaria tuberculosa** by Engelmann in 1856, **Cactus tuberculosa** and **Cactus strobiliformis** by Kuntze in 1891, **Coryphantha tuberculosa** by Orcutt in 1923, **Escobaria tuberculosa** Britton & Rose in 1923 and finally **Coryphantha strobiliformis** Benson 1969.

Escobaria tuberculosa is a simple cylindrical gray-green plant 10-20 cm. tall and 2½-6 cm. wide. As it ages it will have viviparous offsets and becomes quite clumped and devoid of spines at its base.

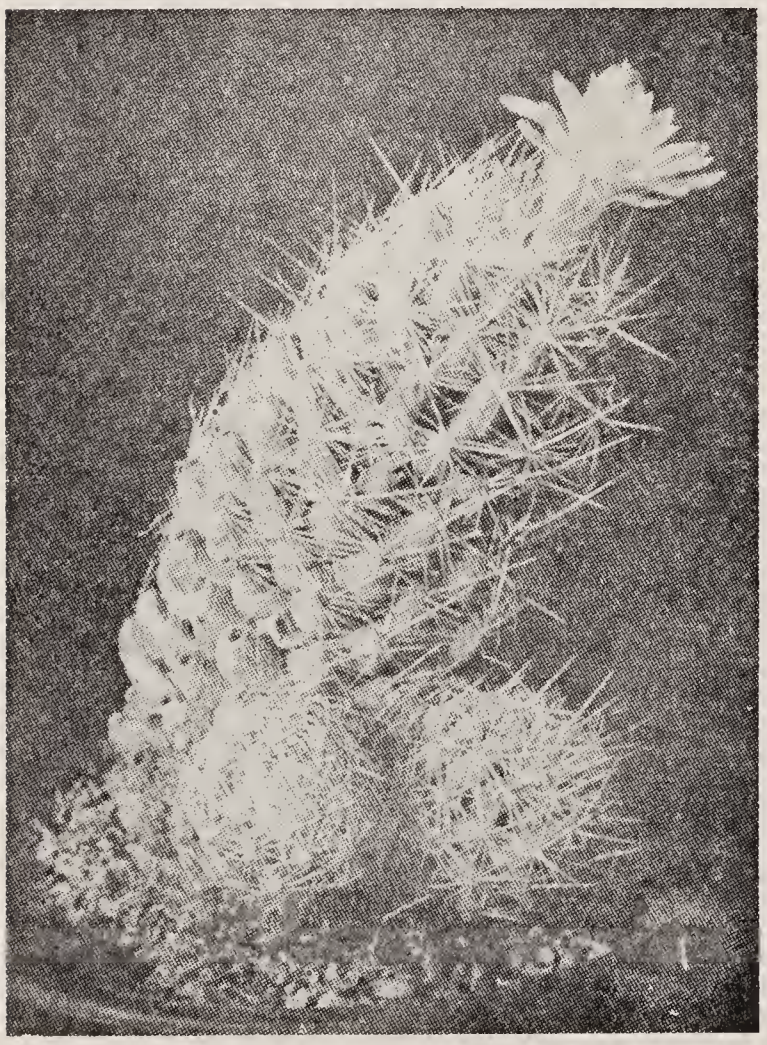
Its short cylindrical tubercles are arranged in 12-16 spirals. The tubercles are topped with several short stout centrals and 20-30 porrect radials all brownish gray to black or even white, all tipped in black or brown. An identifying characteristic of this plant is that its lower nipples become corky and naked due to loss of centrals and radials.

The showy light-pink flowers arise in a circle on the apex of the plant in May-August followed by red oblong juicy and edible fruit that are picked by the local populace if not already eaten by birds or rodents.

Britton and Rose who set up the genus **Escobaria** in 1923 for these plants which are quite different from **Mammillarias** and the **Coryphanthas** did so to commemorate the cactus work of two distinguished Mexican brothers — Romulo and Numa Escobar of Mexico City and Juarez.

Type locality: El Paso, Texas

Distribution: SE Arizona, southern New Mexico, western Texas to central Mexico



Escobaria tuberculosa the cob cactus
Photo-R.C. Proctor

——WHE

PURPLE BUSH
Tetracoccus hallii

Euphorbiaceae
Spurge Family

Tetracoccus hallii is a small to medium sized shrub attaining a height of 30 to 180 cm. (1 to 6 ft.). The spinescent, rigid branches are divergent, yet make up a compact plant. Stems are gray. There are close-set clusters of leaves along the length of the stems and these are in alternate position on new growth. Leaves are simple, oblanceolate to spatulate in shape, and have entire margins. They are short-petiolate and small, 3 to 12 mm. long, and only 3 mm. wide. Leaf color is deep green, dark red, or purple. Flowering period is from March to May. The inconspicuous flowers are unisexual and are borne on separate plants. Petals are absent. There are up to five clustered staminate flowers on each branchlet. Pistillate flowers are either solitary or as many as three to a spur. Stamens number 5 to 8 and the filaments are not united. The three undivided styles are spatulate. These are very short and reddish in color. There are two ovules in each of the three chambers of the ovary. Fruits are numerous, green or reddish, globose-oblong in shape, and closely attached to the stems. The 8-to-9 mm.-long capsules have depressed bases and split open to release the seed. Fruit and herbage is strongly aromatic. Seeds are dark brown, obovoid, and 5 to 7 mm. long. When two seeds develop in a chamber, they are flattened laterally. Often there is but a single seed to a chamber.

Purple Bush ranges in elevational distribution from 150 to 750 meters (500 to 2,500 ft.) in the Lower Sonoran Zone on hillsides and mesas and along sandy washes. It is found in southeastern California, southwestern Arizona, and in northern Baja California, Mexico in widely separated isolated sites. Locations in California are cited as the Chocolate, Chuckawalla, and Cottonwood mountains. In Arizona it extends from Yuma County into southern Mohave and western Maricopa Counties in the Kofa, Castle Dome, Rawhide, Littlehorn, Eagletail, and Harquahala Mountains.

Fruiting branch of *Tetracoccus hallii*

Fruits of Tetracoccus hallii

Tetracoccus hallii has not been in cultivation at the Desert Botanical Garden and a collection of seed was made for the first time this year. Seed ripens in late June and must be collected before dehiscence takes place. This species occurs in a very arid habitat having very high summer temperatures and is found primarily in full sun exposures.

If this species can be successfully grown under cultivation, or be established on dry sites, it should prove to be an excellent ornamental shrub. While the flowers are inconspicuous, the foliage when suffused with red or purple is very attractive. An unusual member of the Euphorbia Family having definite ornamental potential.

REFERENCES:

Benson & Darrow, Trees and Shrubs of the Southwestern Deserts
Kearney & Peebles, Arizona Flora
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

——JHW

GARDEN ACTIVITES

SEPTEMBER

Mon.	25th	Flower Preservation meeting	7:00 P.M.
Tues.	26th	BONSAI SOCIETY meeting	7:30 P.M.

OCTOBER

Tues.	3rd	CACTOMANIACS—Potluck Supper	6:30 P.M.
Sat.	14th	FIELD TRIP—White Tank Mts.	8:30 A.M.
Tues.	24th	BONSAI SOCIETY meeting	7:30 P.M.

NOVEMBER

Thurs.	2nd	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Tues.	7th	CACTOMANIACS meeting	8:00 P.M.
Wed.	8th	CLASS—Desert Plants	3:00 P.M.
Thurs.	9th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	11th	FIELD TRIP—Seven Springs	8:30 A.M.
Wed.	15th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	16th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Sat. & Sun. 18th &	19th	BONSAI SOCIETY Show and Demonstrations	9:00-5:00 P.M.
Wed.	22nd	CLASS—Cultivation of Succulent Plants	3:00 P.M.
Thurs.	23rd	LECTURE—Arizona Birds & Animals	3:00 P.M.
Tues.	28th	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	29th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	30th	LECTURE—Arizona Scenics	3:00 P.M.

1972-73 Program of Activities
Desert Botanical Garden

IN PAPAGO PARK, PHOENIX, ARIZONA

(Enter at 5800 E. Van Buren or 6400 E. McDowell Road)

DESERT BOTANICAL GARDEN is open daily 9 A.M. - 5 P.M., including weekends and holidays.

ILLUSTRATED LECTURES of colored slides taken by staff members are given free each Thursday 3 P.M. - 3:30 P.M., in Webster Auditorium.

CLASSES in the Identification, Propagation and Use of Desert Plants are given each Wednesday 3 - 4:15 P.M., through the winter and spring. Non-members' enrollment is $5, Members free. Classes are held in the Webster Auditorium.

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Tues.	26th	BONSAI SOCIETY meeting	7:30 P.M.

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Tues.	28th	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	29th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	30th	LECTURE—Arizona Scenics	3:00 P.M.

DECEMBER

Tues.	5th	CACTOMANIACS—Members' photos	8:00 P.M.
Wed.	6th	CLASS—Cultivation of Trees & Shrubs	3:00 P.M.
Thurs.	7th	LECTURE—Cacti of Mexico	3:00 P.M.
Sat.	9th	FIELD TRIP—Fish Creek Canyon	8:30 A.M.
Wed.	13th	CLASS DESERT TRIP—Pinnacle Peak	8:30 A.M.
Thurs.	14th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Thurs.	21st	LECTURE—Desert Botanical Garden doings	3:00 P.M.
Thurs.	28th	LECTURE—Arizona Cacti in Flower	3:00 P.M.

JANUARY

Tues.	2nd	CACTOMANIACS meeting	8:00 P.M.
Thurs.	4th	LECTURE—Arizona Wildflowers	3:00 P.M.
Wed.	10th	CLASS—Desert Plants	3:00 P.M.
Thurs.	11th	LECTURE—Arizona Birds, etc.	3:00 P.M.
Sat.	13th	FIELD TRIP—Lake Pleasant	8:30 A.M.
Wed.	17th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	18th	LECTURE—Arizona Scenics	3:00 P.M.
Tues.	23rd	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	24th	CLASS—Cultivation of Succulents	3:00 P.M.
Thurs.	25th	LECTURE—Cacti of Mexico	3:00 P.M.
Wed.	31st	CLASS—Desert Trees & Shrubs	3:00 P.M.

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10-72

1972-73 DESERT BOTANICAL GARDEN PROGRAM

FEBRUARY

Thurs.	1st	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Tues.	6th	CACTOMANIACS meeting	8:00 P.M.
Wed.	7th	CLASS—Cultivation of Trees & Shrubs	3:00 P.M.
Thurs.	8th	LECTURE—Desert Botanical Garden doings	3:00 P.M.
Sat.	10th	FIELD TRIP—Estrella Mountains	8:30 A.M.
Wed.	14th	CLASS DESERT TRIP—Usery Mountain	8:30 A.M.
Wed.	14th	ART ENTRIES DUE FOR CACTUS SHOW	before 5:00 P.M.
Sat.	17th	ALL OTHER ENTRIES DUE FOR CACTUS SHOW	before 1:00 P.M.
Sun. thru Sun.	18th 25th	26th ANNUAL CACTUS SHOW	daily 9-5 P.M.
Tues.	27th	BONSAI SOCIETY meeting	7:30 P.M.

MARCH

Thurs.	1st	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Tues.	6th	CACTOMANIACS meeting	8:00 P.M.
Wed.	7th	CLASS—Desert Plants	3:00 P.M.
Thurs.	8th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	10th	FIELD TRIP—Peralta Canyon	8:30 A.M.
Wed.	14th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	15th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Wed.	21st	CLASS—Cultivation of Succulent Plants	3:00 P.M.
Thurs.	22nd	LECTURE—Arizona Birds, etc.	3:00 P.M.
Tues.	27th	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	28th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	29th	LECTURE—Arizona Scenics	3:00 P.M.

APRIL

Tues.	3rd	CACTOMANIACS meeting	8:00 P.M.
Wed.	4th	CLASS—Cultivation of Trees & Shrubs	3:00 P.M.
Thurs.	5th	LECTURE—Cacti of Mexico	3:00 P.M.
Wed.	11th	CLASS DESERT TRIP—Rackinsack Canyon	8:30 A.M.
Thurs.	12th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Sat.	14th	FIELD TRIP—Cline Ranch	8:30 A.M.
Thurs.	19th	LECTURE—Desert Botanical Garden doings	3:00 P.M.
Tues.	24th	BONSAI SOCIETY meeting	7:30 P.M.
Thurs.	26th	LECTURE—Arizona Cacti	3:00 P.M.
Sat. & 28th &	Sun. 29th	BONSAI SHOW & DEMONSTRATIONS	9:00-5:00 P.M.

MAY

Tues.	1st	CACTOMANIAC—Potluck Supper	6:30 P.M.
Sun.	6th	ANNUAL MEMBERS' MEETING	3:00 P.M.
Sat.	12th	FIELD TRIP—Skull Valley	8:30 A.M.
Tues.	22nd	BONSAI SOCIETY meeting	7:30 P.M.

The DESERT BOTANICAL GARDEN is a non-profit educational institution that is supported by endowments, contributions, voluntary admissions and its Bookstore.

If you would like to have a part in this living museum ask for a MEMBERSHIP APPLICATION at Bookstore at the Visitors' Reception Building or at the Director's office in the Webster Auditorium which is adjacent to the Richter Library and the Herbarium.

For additional information, telephone 947-2800.

No CLASSES or LECTURES are given from May through October but the GARDEN is open daily 9 A.M. - 5 P.M., including weekends and holidays.

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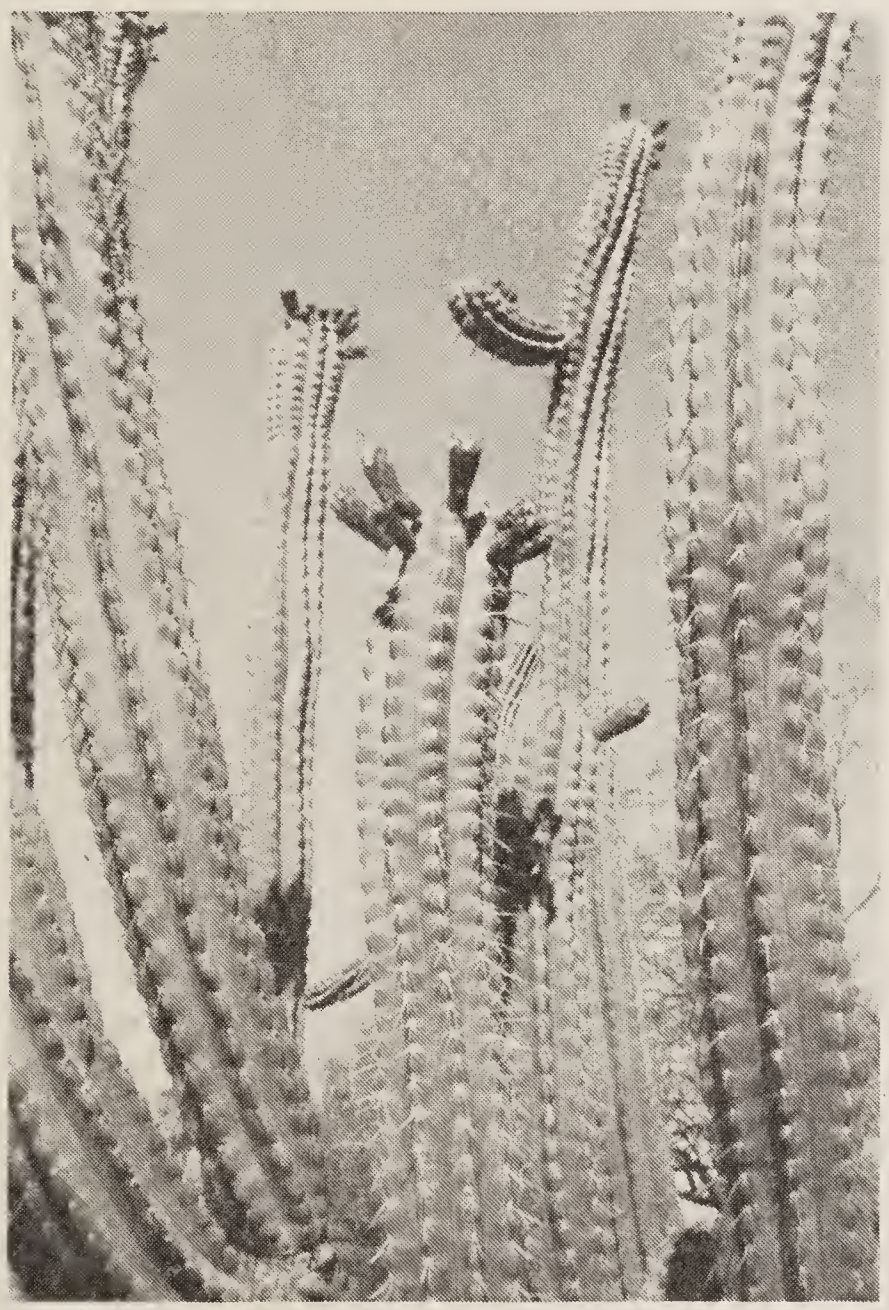
SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI November, 1972 No. 9



REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXVI November, 1972 No. 9

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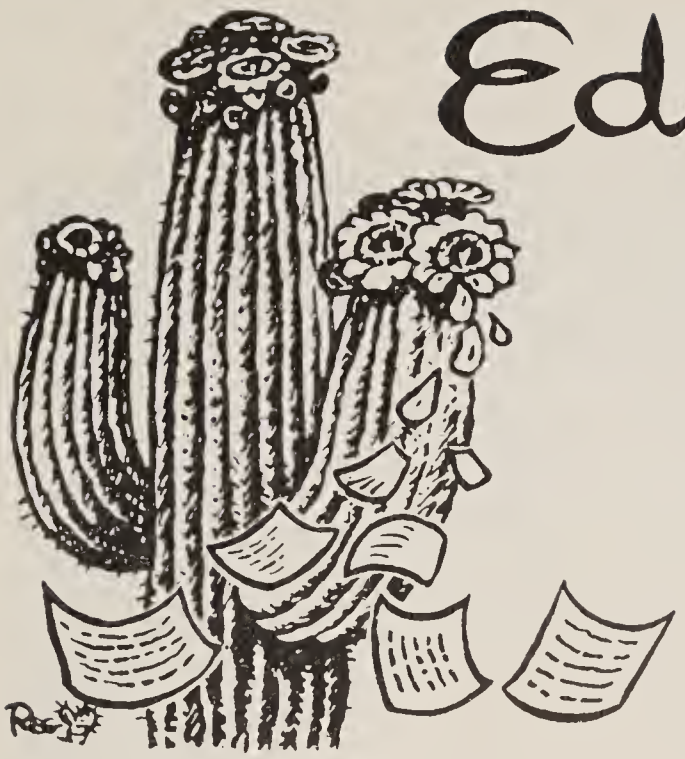


Editor's Notes

November signals "full ahead" for activities at the Garden, with the series of CLASSES called "A Better Understanding of Desert Plants" beginning on Wednesday, November 8th at 3:00 P.M. Registration fee is $5.00 (no fee for Garden Members), and classes will be limited to 30 persons. Each weekly class, of approximately a half hour's duration, will cover one of the following subjects: Deserts, how formed, and their plants; Succulent plants; Culture of succulent plants; Identification of desert trees and shrubs; Culture of desert trees and shrubs; Use of desert plants in landscaping.

Class members are encouraged to bring in plant specimens (trees, shrubs, wildflowers) for identification.

Thursday afternoon LECTURES begin November 9th with "Arizona Cacti in Flower," to be followed in succeeding weeks by: "Arizona Wildflowers," "Arizona Trees and Shrubs," "Arizona Birds and Animals," "Arizona Scenics," "Cacti of Mexico," "Wildflowers of Western Australia," and "Desert Botanical Garden Doings." This lecture series, using slides taken by your Editor, will be repeated until May.

FIELD TRIPS will be held once each month. We will go to the following areas: White Tank Mountains, Seven Springs Park, Fish Creek Canyon, Carl Pleasant Lake, Estrella Mountains, Peralta Canyon, Rackensack Creek, and Skull Valley. These trips are open to all Garden Members, their guests, and other interested persons.

A BONSAI SHOW AND DEMONSTRATION will again be held here in November, on the 18th and 19th. These shows are always interesting, and reveal the skill and ingenuity of the exhibitors. Mark your calendar with a note to attend this excellent event.

We are most happy to introduce you to JEAN WIEHE, our new secretary. She is both efficient and gracious. Our former secretary, Barbara Worbington, spent two weeks familiarizing Jean with our routine. She is adapting to our sometimes chaotic system very well indeed. Do drop in at the office and introduce yourself to her.

"FLOWER PRESERVERS" is a new group that has been formed from members of Janet Alsever's classes in flower preservation in 1970 and 1971. The group has had several meetings and will meet again on November 18th at 9:00 A.M. All those who have attended the flower classes in the past are invited to join the new group and learn more about the subject in workshops, and make items to be sold at our Visitors' Center. Those attending the November 18th session are advised to bring a sandwich if they plan to stay until early afternoon.

Mrs. Alsever may repeat the introducitory series of classes in late March. We will let you know when a decision is made.

AFRICAN WILDFLOWERS will be the topic of the illustrated talk given by Dr. Gentry at the November 7th Cactomaniacs Meeting. The time is 8:00 p.m. here at our Auditorium. Dr. Gentry has taken several long trips to that interesting part of the world.

Mexican Cactus

POWDER PUFF
Echinocereus delaetii

Cactaceae
Cactus Family

On first seeing **Echinocereus delaetii**, you say "That's a cute little Old Man Cactus!" This remarkable little hedgehog certainly does look like a baby "old man", but the latter belongs to the genus Cephalocereus, and grows up to as high as 22 ft.—only forty-four times as tall as **E. delaetii**!

Nevertheless, in 1909 Gurke was so convinced that it must be a Cephalocereus, because of its long, hair-like spines, that he named it **Cephalocereus delaetii**, in honor of Frantz de Laet, a Belgian cactus dealer who had imported many cactus plants from Mexico, through Dr. C. A. Purpus and other collectors. When the plant flowered, however, its Echinocereus-like flowers made it clear that it really belonged in the genus Echinocereus.

This small, four to nine inch tall, densely cespitose plant is completely hidden by its long, curling, white hairs that are three to four inches long. The areoles are closely set, each bearing fifteen or more of the

long, reflexed hairs and a few stiff reddish bristles.

Flowers are reddish-pink, campanulate, with ten to twelve reddish stigma lobes. The ovary is covered with clusters of long, white, bristly spines. The large flowers (two and a half to three inches across) usually appear near the top of the plant, but many **E. delaetii** plants we have here at the Garden flower near the base of the plant. Plants growing in shaded greenhouses have very pale pink flowers.

E. delaetii is an easy plant to grow. Plant it in a gravelly soil with good drainage, water moderately, and give it some sun.

"The Old Lady", "Poodle Dog", "Powder Puff" and "Lesser Old Man Cactus" are only a few of the names applied to this little hedgehog.

Type Locality: Unknown

Distribution: Sierra de la Paila, north of Parras, Coahuila, Mexico, on mountain sides in arid calcareous or sandy soil.

REFERENCES:

Britton & Rose, Cactaceae

——WHE

MIEG AMONG THE CACTI
by C. E. Mieg

(EDITOR'S NOTE: Charlie has been jotting down notes on his long, intensive, extensive — and to hear him tell it, sometimes illegal — life with the Cactaceae. The following is just an excerpt. We want it clearly understood that any illicit behaviour is not recommended by us, nor, we guess, by the law-abiding Mr. Mieg.)

The cheapest way of coming by a good plant is to steal it . Here you have other people's gardens, botanical and public gardens as your source. To swipe a fine plant under the eyes of a watchful caretaker or gardener is indeed a soul - satisfying experience, and a plant acquired in this manner deserves a place of honor in any man's collection. The only rule is: do not get caught, the plants might prove more expensive then. But imagine the satisfaction of carrying home a well-stolen plant in your pants pocket, where it bites the living daylights out of you while you are preserving the most nonchalant air of innocence. Yes, friend, that's the way, but don't try it too often.

Second is the purchase of good plants from reputable dealers. You may think the price high, but experience will tell you that in the long run this is the cheapest way of plant acquisition. The plants are healthy and you only have to watch for the obvious pitfalls. Such plants are raised in greenhouses and are not fit for immediate outdoor planting. In no time they will burn up in the sun. They must remain in pots and be gradually acclimatized to their future living conditions.

Plants from cuttings are easy as a third method, but while the method is sure and fast it has its pitfalls, also. For instance, any of the bigger plants such as the Lemaireocerei and Pachycerei, Trichocerei, etc. (candelabra plants of 20 feet height and up when mature) will not grow in the true shape of the natural plant. Instead of forming candelabra, they tend to branch at the base and the central trunk is totally missing. This can be overcome in many cases by the cutting off of undesired branches, thus forcing the growth to the desired shape.

The collecting of wild plants seems the most desirable way for the collector, but it actually is the most expensive means in the end. This seems contradictory at first, but experience will soon tell.

I can give a drastic example with a pincushion, growing in southern Arizona and northern Mexico. A rather common plant, with central spines straight as well as hooked (**Mammillaria olivae**). I started off from Phoenix and hit a sandstorm before getting to Tucson. Result, with visibility zero I hit a car which caused a beautiful chain reaction with about five cars damaged. My own front end was badly damaged and the lights pointed skyward. Traffic ticket of course. That night another ticket for faulty lights while driving through Tombstone. Morning after, I collected my plants (three) southeast of Douglas, Arizona, and returned. Three days later I travelled to Tucson for court appearance. I was absolved from paying a fine, but it meant a 250-mile drive with two tires blown out on the way. This, of course, was followed in Scottsdale by the car repair. End result: A bit over 600 dollars in expenses which insurance did not cover. Drive of some 900 miles, some pretty rough. And I could have purchased the plants locally at the inflated price of $6.00 for the lot.

So it is with all collecting. Most states have laws which protect the plants. Laws for stealing Arizona cactus, for instance, call for a fine of up to $300 for each plant. Then there is the matter of transporting the plants without a permit. The latter of

(Continued on page 104)

Arizona Wildflower

BLUEBELL
Campanula rotundifolia
Campanulaceae
Bellflower Family

The Bluebells of Scotland are natives of Arizona. And of Mexico and Canada and Sweden and Russia. And Scotland, too.

Campanula rotundifolia is an exceedingly widespread species, found in the boreal regions of the Northern Hemisphere. Such regions, as one goes southward, are found at higher and higher elevations. In Arizona, **C. rotundifolia** grows at elevations of 8000 ft. and up, and in the mountains of Nuevo Leon in Mexico its lower level of growth is even higher than in Arizona.

Campanula means little bell, and **rotundifolia** refers to the round basal leaves which are only an inch across and are seldom seen. The stem-leaves are linear or lanceolate, two to three inches long.

This is an upright or spreading perennial, five to twelve inches tall when growing wild, but up to twenty inches tall when grown in a garden. The bright blue, drooping bell flowers are an inch across, and appear in few-flowered racemes from June through September.

You will find them and identify them quite easily if you are in the White Mountains, Pinaleno Mountains or San Francisco Peaks of Arizona, on meadows and rocky slopes at 8000 ft. elevations. They grow in rather dense masses and their lovely color is eye-catching.

REFERENCES:

Kearney & Peebles, Arizona Flora
Rickett, Wild Flowers of the United States, Vol. IV
Royal Horticultural Society Dictionary of Gardening

——LD

Can anyone resist the prospect of bluebells in next year's garden? They must, unless they move from desert to mountains.

ASPECTS OF THE DESERT

From Apache Junction (34 miles east of Phoenix) to man-made Roosevelt Lake, the Apache Trail runs up, down, left and right for 46 paved and unpaved miles past dams, lakes and mountain scenery. It seems incredible that this was the only way in 1911 for men and materials to get to the job of building Roosevelt Dam.

MIEG AMONG THE CACTI

(Continued from page 101)

course requires another permit which shows that the plants have been removed from private property with the owners' consent. This permit, like the former, costs $5.00. A Mexican trip can be a lot more expensive. In the first place you will not get a Mexican permit. This means that when caught your vehicle is confiscated right off the bat. Then you get hauled into a local calaboose for a stay of indefinite length. The final fine is problematical. Be warned that the laws down there are not based on English law (Napoleonic Code instead of English Common Law) and they can just about do with you what the judge wants, and, more important, when he wants to.

Add motels, hired labor, cleaning of plants for American inspection and gassing at the border, and you have bought a juicy package of work and trouble, plus of course a substantial investment in time, tires and gasoline.

I mention here the moving of certain plants. While the little ones are easy, when it comes to giants like the saguaro you are facing real expense. $1500.00 has been paid for moving mature plants. It must be understood that the giant cacti with arms are in a continuous struggle for balance. Normally, the plant grows with a single stem. Over the years, as the plant grows very tall, wind and weather cause it to lean a bit off center. The plant grows an arm to restore balance. After a few years the weight becomes too great on this side and the plant grows an arm on the opposite side. This process is repeated during the life of the cactus. It is a continuous struggle to keep its balance on its single trunk. Now, when a plant is moved and thus thrown out of balance, the arms tend to twist off — they are not of the strength of tree branches. Hence a lot of complicated bracing and padding becomes necessary. All this is complicated by the soft body of the plant, and its spines. When the plant is laid down it will crush the underside through its own weight, and what is left is hardly worth replanting.

Smaller plants also create their problems, especially if they are approaching maturity. For instance, we may notice that all cactus have a tendency to incline themselves toward the south. The growing center thus gets the maximum of light. But when a wild cactus is transplanted outdoors again, care must be taken that the same part of the plant faces south as before digging it up. This, too, is never mentioned in manuals of cultivation. But a plant is used to sun on one side and shade on the other. If we replant and do not follow this procedure, we may have a part or side of the cactus facing the sun which was formerly in shade. Result: A sunburn which may be lethal and definitely will scar the plant greatly. You yourself are a parallel case. You may bake in the sun, lying on your back for weeks and getting your tan without damage once you are used to the sun. Then suddenly roll over and give the other side the full sun treatment. Disaster.

Of course the collecting of the wild plant has its compensations, though it is the least attractive way of acquiring a collection if money is the main consideration. The pleasure of tramping over strangé country is definitely and often much more important than the actual returns for the effort. Thus the collecting cost is actually another form of amusement, against which the expense may be charged.

CHRISTMAS ALREADY?

No, the clever guys who gave you Veterans' Day on Oct. 23rd haven't dared to move Christmas—yet. It's still on Dec. 25th, and the list enclosed with this issue will help to solve your gift problems with book, seeds, candy and minerals. Prices include mailing, and proceeds will help our Desert Botanical Garden.

Arizona Cactus

NIPPLE BEEHIVE CACTUS
Coryphantha macromeris

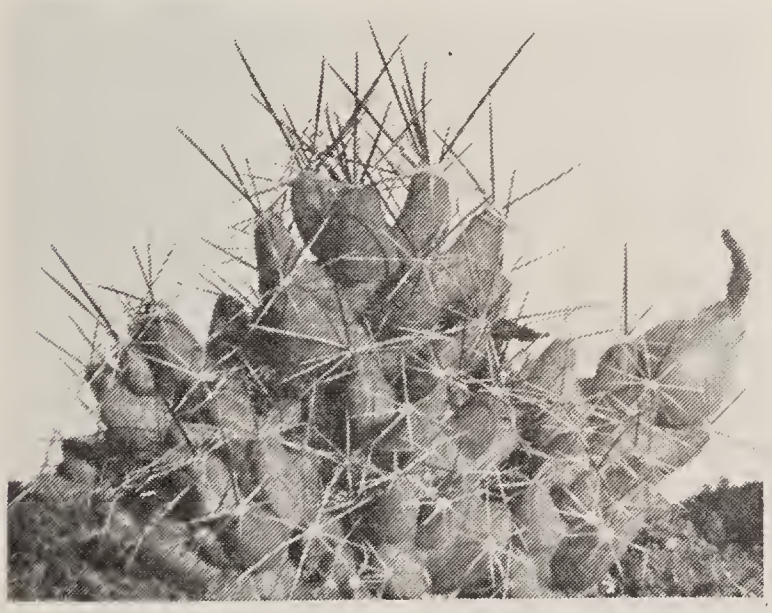
Cactaceae

This is a rare plant for Arizona, and only a few have been found in the Mule Mtns. near Bisbee, Ariz., and on the Coronado Memorial Trail along the Mexican border.

The plant is quite dark, looking like a dark rock from a short distance, but on closer examination it is dark green, many-headed, and with large, soft tubercles, grooved at the top. There are one to three black centrals, one and a half to two inches long, while the ten to twelve radials are white to gray and one-half to one inch long.

Coryphantha (meaning flower on top) **macromeris** (with large divisions) was described by Engelmann as **Mammillaria macromeris** in 1848 and went through six synonyms until Britton and Rose placed it in the genus Coryphantha in 1923.

The body of the plant is somewhat under eight inches tall. The irregular, soft tubercles are one-half to one and a half inches long, and three-eighths to five-eighths inches at the base. Out of the groove at the top of the tubercles, clusters of new tubercles often emerge, which even later form into new heads. The plant bears lovely purple flowers, two and a half to three and a half inches across and two to three inches long. Fruit is large, prominent, juicy and green, one half inch broad and an inch and a quarter long. It is quite sour to the taste and contains fifteen to thirty buff-colored seeds which are smooth and globose. The fruit bears a few scales with hairy axils.



To get an idea of the size of *C. macromeris* fruit, compare with picture at right.

The green fruit, photographed slightly larger than life-size.

C. macromeris used to be quite plentiful in southern New Mexico, but large, mature plants are now quite rare—greedy cactus collectors have been extremely diligent with their trowels. Many small plants can be found in the southeast corner of New Mexico, in Texas and southward to Zacatecas, Mexico. The plants adapt themselves readily to shaded culture, and will reward you with large, gorgeous

flowers and striking fruit. (You will, of course, buy your plants from reputable dealers.)

Type Locality: Near Donana, New Mexico.

Distribution: Southern and southeastern New Mexico, western Texas, Chihuahua south to Zacatecas, Mexico. Found in rocky grassy land.

REFERENCES:

Benson, Cacti of Arizona
Britton & Rose, Cactaceae
Earle, Cacti of the Southwest

——WHE

The start of new plants. Small tubercles rising from the top grooves of *Coryphantha macromeris*. Six or more can be counted here.

Desert Trees and Shrubs

VELVET ROSETTE
Psathyrotes ramosissima (Torr.) Gray
Compositae
Sunflower Family

Psathyrotes ramosissima is a rather impressive name for this perennial herbaceious plant. It is a small, rounded, low-spreading shrub about 30 cm. (1 foot) in diameter. Stems, 5 to 20 cm. long, divergently branched from the base, form a compact, sometimes flat, cushion. Herbage is densely tomentose with matted white wool. The numerous thick, gray-green leaves are alternate in position and ovate to ovate-deltoid in shape. These are long-petiolate, 5 to 25 mm. wide, 4 to 20 mm. long, and coarsely dentate. There is a strong turpentine odor to all parts of the plant. Flowering occurs mainly from March through June, but often continues throughout the year. The flowers are perfect, and the solitary discoid heads are only 6 mm. high. Corollas are tubular, to 5 mm. in length, and mostly yellow, but occasionally purple. Fruit is a ribbed, 2.5 mm. long, inversely cone-shaped achene that is densely covered with long soft white hairs. The pappus of the fruit consists of numerous bristles, 2.5 to 3 mm. long.

Distribution of Velvet Rosette extends south from southwestern Utah into western Arizona, southeastern California

and into northern Baja California, Mexico. In Arizona occurrences are listed only from Mohave and Yuma counties, but collections were taken in 1970 by the Desert Botanical Garden staff at a site 20 miles east of Phoenix, Arizona in Maricopa County. This extends the known range eastward about a hundred miles. (**P. ramosissima** is limited to the Lower Sonoran Zone below 914 meters (3,000 ft.), growing in sandy or dry hard soils. It is abundant, where it is found, along desert roads, open washes, and on plains and mesas.

Psathyrotes ramosissima has wide limits of temperature tolerance, withstanding below-freezing temperatures as well as heat up to 120 degrees F. It is drought-hardy and occupies a very xeric habitat. Observations indicate that this plant is one that grows on disturbed soils. It is frequently seen along road shoulders, but a few yards distant no plants are to be found.

Velvet Rosette would make an excellent low border shrub or ground and bank cover for the desert garden. It could be utilized in the same manner that Santolina has been used in western gardens. Having a single taproot, it could probably be successfully transplanted if all of the root were taken intact. Mature seed-heads could be collected and scattered. In either case, however, conditions approximating that of the field habitat should prevail.

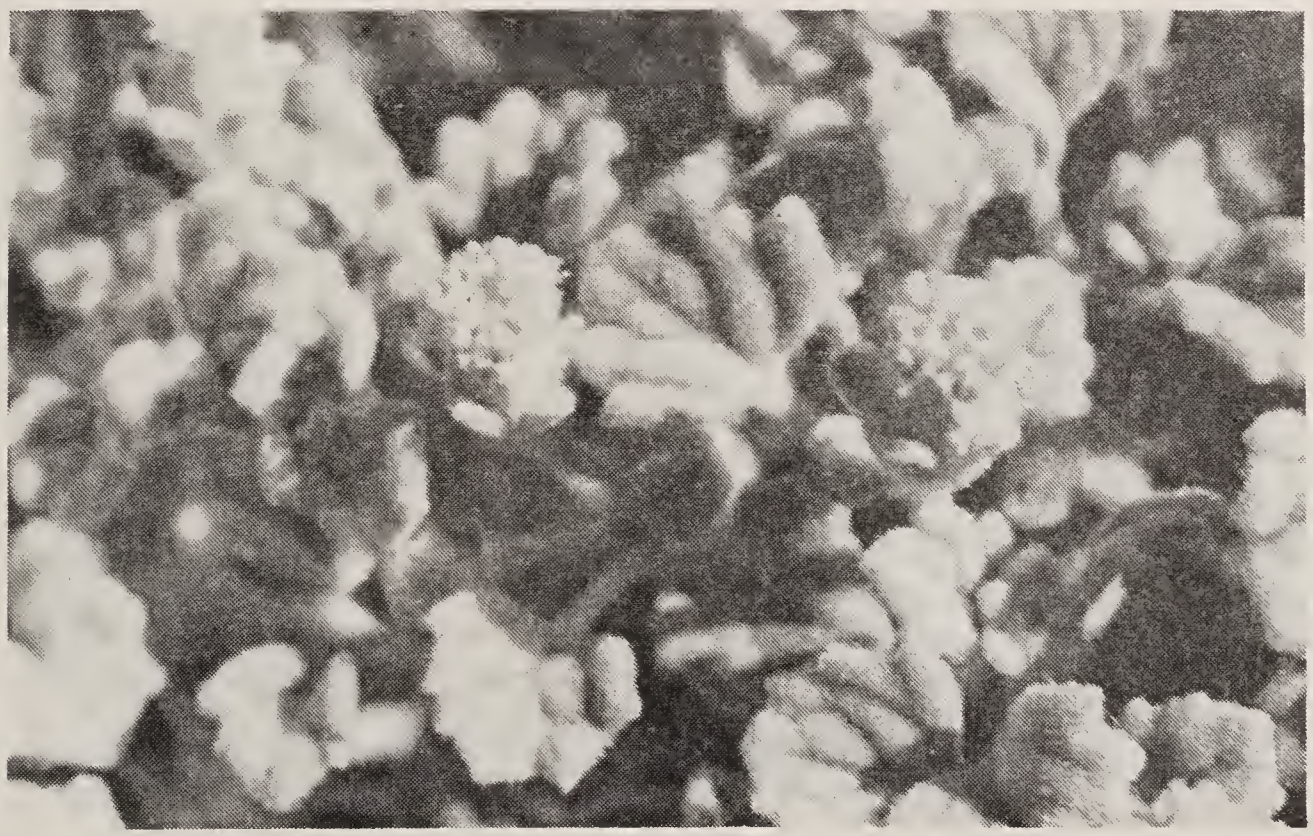
REFERENCES:

Jaeger, E. C., Desert Wild Flowers

Kearney and Peebles, Arizona Flora

Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert

——JHW



Both pictures on this page show why Velvet Rosette is potentially an attractive plant for desert gardens.

MEMORIALS

The Desert Botanical Garden, being a non-profit organization, has been the grateful recipient of many gifts and memorial donations from members of the Garden and their friends. The gifts have taken the form of plants, books, furniture, and checks designated for certain improvements to the Garden.

Many of the first gifts, in 1938, were exotic plants which have now grown to superb mature plants. An outstanding recent gift was that of M. C. Richter of Santa Barbara, who in 1968 gave us his extensive library which is valued at $78,000.

In the intervening years, many memorial gifts have beautified the Garden when our limited treasury would have made such additions impossible. The Archer House, built with the monetary assistance of Lou Ella Archer in 1952, was then occupied by Your Editor, and now Dr. and Mrs. Gentry live there. More modest gifts have bought essential books for our library, or have helped us purchase needed equipment.

We know it would be of interest to many Members to learn that in 1971-72 gifts were given to the Garden as memorials to the following departed persons: C. C. Pidgeon, Austin Fort, E. Osborn-Foster, Mary Waterman, Mary Treen Oakes, Warren Krause, Dr. D. E. Matthiesen, Dr. C. M. Schroeder, Olga Mahoney, Dr. Thomas Taber, Sr., Nancy Lane, Mrs. H. McD. Moir, M. A. Natanson, Edward Stocks, Herbert W. Boole, Paul Matsusaki, and James Cahill, Jr.

Rather than send flowers as a memorial to departed friends, more people today prefer to send a ccontribution to the Garden that will live for years in the form of books, exotic plants, needed improvements, etc. Such gifts are a lasting memorial: plants live for years — books live almost forever.

GARDEN ACTIVITIES

NOVEMBER

Thurs.	2nd	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Tues.	7th	CACTOMANIACS meeting	8:00 P.M.
Wed.	8th	CLASS—Desert Plants	3:00 P.M.
Thurs.	9th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	11th	FIELD TRIP—Seven Springs	8:30 A.M.
Wed.	15th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	16th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Sat. & Sun.			
18th &	19th	BONSAI SOCIETY Show and Demonstrations	9:00-5:00 P.M.
Wed.	22nd	CLASS—Cultivation of Succulent Plants	3:00 P.M.
Thurs.	23rd	LECTURE—Arizona Birds & Animals	3:00 P.M.
Tues.	28th	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	29th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	30th	LECTURE—Arizona Scenics	3:00 P.M.

DECEMBER

Tues.	5th	CACTOMANIACS—Members' photos	8:00 P.M.
Wed.	6th	CLASS—Cultivation of Trees & Shrubs	3:00 P.M.
Thurs.	7th	LECTURE—Cacti of Mexico	3:00 P.M.
Sat.	9th	FIELD TRIP—Fish Creek Canyon	8:30 A.M.
Wed.	13th	CLASS DESERT TRIP—Pinnacle Peak	8:30 A.M.
Thurs.	14th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Thurs.	21st	LECTURE—Desert Botanical Garden doings	3:00 P.M.
Thurs.	28th	LECTURE—Arizona Cacti in Flower	3:00 P.M.

GIFTS For CHRISTMAS

The Desert Botanical Garden Book Store

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Prices quoted include mailing in the United States. Add 10% for all foreign orders.
Terms: Check, Draft or Money Order with your order. Please do not request C.O.D.

*Garden Publication, subject to dealer and library discounts.

BOOKS FOR THE SUCCULENT PLANT ENTHUSIAST

AGAVES, The—Breitung
The Cactus and Succulent Journal 1968 Yearbook is a fine pictorial presentation with an abundance of photos of Agaves and their flowers. 108pp. Paperbound $4.95

BOOK OF CACTI AND OTHER SUCCULENTS, The—Chidamian
An excellent popular book on the growing, propagation and insect control of cacti and succulents. The comparative drawings are a great help. 258 pp., 14 B&W photos, 4 color, 22 pages of drawings showing 220 subjects. $5.75

CACTACEAE, The—Britton and Rose (Reprint)
A basic reference monograph that will always be a positive reference. Originally in four volumes, now available in a reprint of two volumes. 1048 pp., 1250 illustrations. 2 Vols. $26.00

CACTI—Borg
The only one-volume work containing most of the species of cacti. Invaluable for the ardent amateur and keen student. The plant descriptions are non-technical and understandable. 448 pp., 128 photos. $7.65

CACTI OF ARIZONA—Benson
Revised, third edition. A necessary book for the researcher and botanist. 218 pp., many color photos. B&W photos, distribution maps, keys and culture notes. $7.25

***CACTI OF THE SOUTHWEST—Earle**
Desert Botanical Garden Science Bulletin #4. Fourth printing. A guide to 118 species found between the Sierra Nevada Mtns. and the Rio Grande, each illustrated and described. 114 pp., 120 illustrations. Paperbound $[redacted] 2.10
Cloth $[redacted] 3.65

11-72

*CACTUS AND SUCCULENTS AND HOW TO GROW THEM—Haselton
Over 100,000 of these inexpensive booklets have been printed for the aid of the beginner. 200 common names are included along with 65 illustrations. Desert Botanical Garden Science Bulletin #5. 64 pp.
Paperbound $0.[redacted] 85

HANDBOOK ON SUCCULENT PLANTS—Brooklyn Botanic Garden
A helpful new booklet by outstanding specialists in their various fields. Illustrated with B&W and color photos. $1.40

HELLO THERE!—Snyder
Forty-six full-page photos of saguaros (Arizona's giant cactus) in natural comical poses with amusing captions. 7" x 11" booklet with color cover, 48 pp. $1.40

HOW TO KNOW YOUR CACTI—Dawson
A well-illustrated book with picture keys to help you identify native U.S.A. cacti and many introduced species. 158 pp. $4.15

OBSERVER'S BOOK OF CACTI AND OTHER SUCCULENTS, The—Scott
A good book describing easy-to-grow plants. 160 pp., 16 color plates. $2.10

POCKET ENCYCLOPEDIA OF CACTI IN COLOUR AND OTHER SUCCULENTS—Lamb
A recent well-written small book for the American fancier. 112 very fine color plates illustrating 420 species. 220 pp. $[redacted] 5.10

*SELF-CONDUCTED NATURE WALK—Earle
Desert Botanical Garden Science Bulletin #2, 24th edition. A guide to the thousands of plants in the Garden on a self-conducted tour basis. 16 pp., 7 illustrations. Pamphlet. $0.15

SOUTHWESTERN DESERT IN BLOOM, The—Earle, Editor
75,000 of these popular books have been printed. Magnificient large full-color photos of the Southwest's cacti. 32 pp., stiff paper covers. $1.65

SUCCULENTS FOR THE AMATEUR—Brown
A beginner's book, showing 400 kinds of easily-grown succulents other than cacti. 172 pp., 264 photos. $[redacted] 4.95

WHAT KINDA CACTUS IZZAT?—Manning
An amusing book of cartoons plus authentic botanical facts about the desert's strange plants. 21st printing, 108 pp., 107 cartoons, two-page map.
Paperbound $2.10

SAGUAROLAND BULLETIN—Edited by Garden Staff
Published 10 times a year for Members since March, 1947. The official Bulletin of the Desert Botanical Garden. Back issues, 50 cents each. Annual membership in Garden including SAGUAROLAND BULLETINS. $5.00

BOOKS OF GENERAL DESERT INTEREST

AMERICAN SOUTHWEST, The—Dodge and Zim
A paperback covering the Southwest, with illustrations of the Indians, Birds, Trees, Cacti, Flowers, Minerals, Historical Sites, etc., 160 pp. $2.10

BIRDS OF NORTH AMERICA—Robbins, Bruun and Zim
A new easy-to-follow guide to field identification that is being used by many bird watchers. 350 pp. in color, sonagrams and distribution maps. $4.10

BIRDS OF THE SOUTHWEST DESERT—Smith
38 birds of the Lower Sonoran Desert interestingly described and accompanied by drawings in color. 70 pp. Paperbound $3.65

COMMON EDIBLE AND USEFUL PLANTS OF THE WEST—Sweet
Trees, shrubs, herbs and vines that provide food for regular use or for survival. 68 pp., 116 illustrations. Paperbound $1.65

DESERT WILD FLOWERS—Jaeger
Now available in a paperbound edition is this book for plant prowlers in the desert. 756 line drawings of desert wild flowers. 322 pp. $3.10

FIELD GUIDE TO ROCKS AND MINERALS—Pough
A highly-recommended book for the "rock-hound" and amateur geologist, dealing with all rocks and minerals you might encounter in the field. Very good descriptions. 350 pp., 91 B&W photos, 149 color photos. $6.10

FIELD GUIDE TO WESTERN BIRDS—Peterson
A practical guide to outdoor identification of birds found west of the Rockies. 244 pp., 740 illustrations, many in color. $6.10

FLOWERS OF THE SOUTHWEST DESERTS—Dodge and Janish
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FLOWERS OF THE SOUTHWEST MESA
by Pauline M. Patraw
Drawings by Jeanne R.
FLOWERS of the SOUTHWEST DESERTS
by NATT N. DODGE
Drawings by JEANNE R. JANISH

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MAMMALS OF THE SOUTHWEST DESERTS—Olin and Cannon
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MEET THE SOUTHWEST DESERT—Wells
An authoritatively written book with 103 excellent photos by Marvin H. Frost, Sr. 96 pp., 13 line drawings, 1 map. $[redacted] 2.10

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100 DESERT WILDFLOWERS IN NATURAL COLOR—Dodge
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PALMS AND CYCADS—Hertrick
Observations on unusual plants growing in the Huntington Botanical Garden, written by its former Director. 140 pp., 126 excelent photos. $[redacted] 5.75

POISONOUS DWELLERS OF THE DESERT—Dodge
A valuable little book that includes information on the treatment of insect and snake bites. 48 pp., 26 photos, 1 map. Paperbound $0.[redacted] 90

PRACTICAL GARDENING IN SOUTHERN ARIZONA—Valley Garden Club
A necessary book for gardeners who want year-round success in hot areas. (We supplied the chapter on how to grow a desert garden.) 82 pp.
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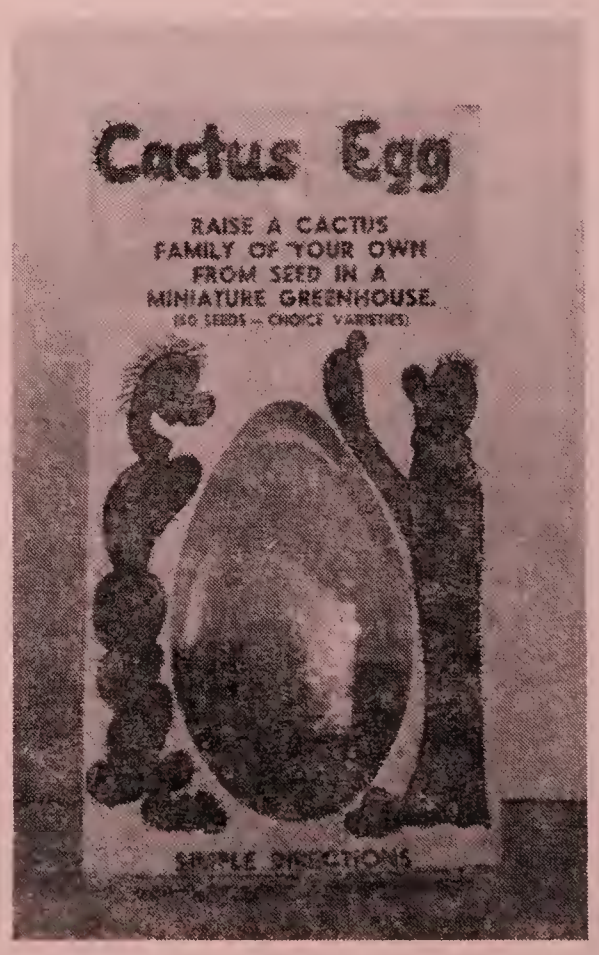

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SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVI December, 1972 No. 10

Season's Greetings

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXVI ~~November~~ DECEMBER 1972 No. ~~9~~ 10

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Editor's Notes

To All Our Friends . . .

Because you enjoy the DESERT

and like things BOTANNICAL

we send you holiday good wishes from our GARDEN

The Garden's staff

and volunteers

Arizona Cactus

GYPSUM CACTUS
Utahia sileri

Cactaceae

This small cylindrical plant is usually found growing in strata of gypsum, hence the common name. Its color is so similar to its surroundings, a dull, buff-gray colored gypsum, that the plant is not noticeable until after rains, and then only because it swells up and rises above the level of the gypsum.

Engelmann described it in 1896 as **Echinocactus sileri**, naming it for Siler, who had sent him the type specimens collected at "Cottonwood Springs and Pipe Springs, Utah". This area, in the late 1800's, was considered by many as part of Utah, but was, and still is, legally part of Arizona, the old lawless "Arizona Strip Country", the northwest corner of the state, as large as New Jersey, cut off from the rest of Arizona by the Grand Canyon, and cut off so thoroughly that to reach it by road today you must drive 2½ to 3 times the mileage that a direct line from Flagstaff or Kingman would measure.

Toward the end of the nineteenth century, the Strip was frequented by outlaws who found it a pretty convenient way to escape the Arizona lawmen, because the Arizona deputies had to travel into California and Nevada to reach the Strip, make arrests, and then try to take their unwilling captives back to Arizona, retracing their route. A good many prisoners made their "git-away" on the way through Nevada and California and "holed up" back in the Strip, and the deputies lost their enthusiasm, with the end result that bad men and bandits "hid out" in the Strip Country for many years, unmolested by the law.

In 1922 Britton & Rose, still believing that the plant was found in Utah, set up the genus Utahia to honor the monotype. Dr. Benson, in 1969, placed the plant in the genus Pediocactus because of its resemblance to others in the genus — its size, ability to shrink into the ground during dry or cold periods, and its way of dehiscing seeds through a circumscissile basal pore.

This specimen of *Utahia sileri* is two and a half inches tall.

This single, globose plant is gray-green, about four inches high and two to three inches in diameter, with three or four ascending 1-1½ inch central spines, straight, and gray tipped with black. The radial spines are in groups of eleven to fourteen, rather whitish, one half to three quarters of an inch long, spreading nearly parallel to the body of the plant, and partly obscuring it.

The small flowers are about one inch in diameter, and rise from the apex of the plant. They are yellow with maroon veins on the petals. Fruit are semi-dry, an inch in diameter, and light green. The shape is nearly cylindrical, but narrower at the base where the basal pore appears. Fruit

is about one-half inch in height and a quarter of an inch in diameter. The gray-black seeds are one-eighth of an inch long.

This is a very hard plant to grow under cultivation, even though it does not insist on gypsum, but grows in any good potting soil. It grows very slowly and needs only a very little moisture, usually in early spring and again in the middle of the summer.

Type locality: Pipe Springs, Arizona.

Distribution: Central northern Arizona, along Utah border.

REFERENCES
Benson, Cacti of Arizona
Britton & Rose, Cactaceae
Earle, Cacti of the Southwest

—WHE

DECORATING, DESERT STYLE

One of this year's gourds, above, and one of last year's ocotillos at right.

Here are the Garden's 1972 Christmas trees, branches of green-barked **Canotia holacantha** hung with red-enameled Coyote Melons — the desert gourd **Cucurbita digitata.** Thelma McDougall came up with the idea of using the Canotia, Jean Wiehe brought the gourds, Joy Lee Schroeder picked out the best-looking branches, and all three donated their artistry and time to put the works together. You can see for yourself how handsome the results are if you stop by the Visitors' Building, the Auditorium, or the office.

Every year we've had different desert-style decorations. We've never copied ourselves, but many other people have copied us. Back in 1964 we used white-sprayed Agave flower stalks hung with bright shiny ornaments, and since then we've been flattered by a lot of imitation.

Another year we used candles made out of tall mailing tubes with "flames" that were really barrel cactus fruits. That was the year we also decorated with **Opuntia styrofomia,** a very rare plant that had yellow plastic toothpicks for spines.

Last year we "planted" ocotillo branches in pots of sand and sprayed them white before hanging them with glass balls. When the holidays were over we really planted the branches, and during the fall rains every one of them, still white as snow, put out new green leaves!

And what will we use next year? Keep tuned to the Bulletin and see!

CALIFORNIA COTTONY COCHINEAL SCALE

The insect **Dactylopius confusus** Cockerell is most easily recognized by the immense flocculent masses of white wax which cover the bodies of the numerous clustered insects. When the insect masses are crushed they exude a bright crimson-colored liquid which is quite a contrast to the enveloping cottony wax.

This species is closely related to the true cochineal insect, **Dactylopius coccus**, described in the October 1972 issue of the Saguaroland Bulletin.

D. coccus is found only in southern Mexico, while **D. confusus**, the cottony cochineal, occurs in practically all the cactus regions of the United States and northern Mexico. It is attacked by a large number of predaceous insects who help keep it in check.

Cottony cochineal lives on our native platyopuntias and cylindropuntias and is occasionally found on other cacti. The insects can gradually cover entire stands of opuntias, causing the stand to die out. This then creates an absence of healthy plants for the insects to feed on, so they in turn also die, causing a decline in the insect population until the area is quite free from cochineal for a period of years.

With the proper combination of moisture and heat, these insects will multiply rapidly. During extreme dry periods they do not reproduce at all. They spread from plant to plant by floating in the wind, suspended from their filaments of white "cotton".

Eradication of these insects is accomplished in several ways. They can be killed by the application of three sprayings of Volck oil-emulsion and water, at five-day intervals. Later the dead masses can be scraped or washed off the pads. Some persons prefer to wash off the cottony masses with a high-pressure hose, but this has to be done quite often, and the excessive amount of water used will get down to the roots of the prickly pear, causing it to grow too fast. (Excessive growth leads to split pads and inability to withstand drought.) Whatever method is used, spraying should only be done after the hot sun sets.

If an infestation gets out of hand it is advisable to dig up the plants and cart them off to a refuse dump. You may not eradicate the cochineal scale completely, but you will be able to keep it under control.

——WHE

California Cottony Cochineal Scale.

Sunrise Snowfall — Saguaro — Cholla

There really is no reason to equate Christmas with snow—deserts, tropics and the whole Southern Hemisphere celebrate the holidays without snow, and their celebrations are no less happy—but once every five years we do get snow on our desert cactus, and Christmas is somehow more Christmassy.

Arizona Wildflower

CINQUEFOIL
Potentilla thurberi

Rosaceae
Rose Family

Close-up of the flower of Arizona's dark red Cinquefoil, in the Rose Family.

If you've ever seen **Potentilla thurberi,** you remember exactly when and where. You'll say "That was the summer we vacationed in the Chiricahua Mountains" or "That was the year we got the station wagon" or something similar. The memorability of this plant is a combination of distinctive color, attractive texture, and definite "clean" shapes of both flower and leaves. Plus, perhaps, the location in the cool pine forests and the not-too-common-ness.

The genus Potentilla is a large one, but recognizable for its five-part flowers: five sepals and five subtending bracts that seem like an extra calyx. Cinquefoil, the common name, refers to the five leaves, actually five-part leaves, each single leaf divided palmately into five fine-toothed segments.

P. thurberi grows in rich soil in coniferous forests at elevations ranging from 6000 ft. to 9000 ft. It is about a foot tall and in late summer and fall — July to October — it puts out deep red flowers an inch or more across. The silky sheen to the petals adds to the rich effect. Flowers are borne singly or in small close clusters on erect stalks. There are ten or more stamens and five or more pistils.

Because there is little undergrowth in pine forests, wildflowers like this are unusually eye-catching and provide a good deal of satisfaction for amateur flower-watchers.

Distribution: New Mexico, Arizona and northern Mexico. In Arizona, Apache, Navajo and Coconino counties south to Cochise and Pima counties.

REFERENCES

Kearney & Peebles, Arizona Flora
Rickett, Wild Flowers of the United States, Vol. IV.

—LD

Photo taken in Navajo County, Ariz. in early August.

CHIOTILLA
Escontria chiotilla

Cactaceae

This is a short-trunked "cereus type" of cactus, having hundreds of ascending branches reaching up to twenty-five feet in height, and spreading to a diameter of thirty-five feet. There is some resemblance to the Myrtillocacti, except that the Chiotilla has a rounded crown and the Myrtillocacti have a somewhat flattened crown.

The most peculiar thing about this plant is that its flowers and fruits are covered with stiff, papery, translucent, persistent scales. No other cactus has this characteristic.

This plant was named **Cereus chiotilla** by Dr. A. Weber, who was in Mexico with the French Army in the 1860s. In 1906 Dr. Rose erected the generic name of Escontria in honor of Senor Don Blas Escontria, a distinguished citizen of Mexico who died in 1906.

The plant is quite prevalent in the Tehuacan Valley, and its fruits are sold in the Tehuacan market under the names "jiotilla", "chiotilla", and "tuna" (the last being the name used for all cactus fruits). When dried, the fruits taste like gooseberries. The flesh is a regal purple in color and has a pleasing tart taste.

Escontria chiotilla is many-branched, with seven or eight acute ribs on its bright green stems. The stems are weak and easily broken off, yet the plant will become tall and very broad, as mentioned above. The stem ribs bear ten to fifteen short radial spines in areoles that are so close together that they become confluent. These areoles also bear several central spines, one much longer than the others, somewhat flattened and light in color. Flowers are borne near the apex of the stems and are an inch and a half in length, yellow in color, and curiously covered with overlapping half-inch-long scales that persist and become large scales on the fruit which is up to two inches in diameter, edible and filled with many seeds that are black, rugose, with a flattened broad basal hilum.

Chiotilla will grow in cultivation, but is subject to freezing. It has a tendency to sprawl when young, so much pruning is needed, but care must be exercised in pruning so that the plant's weight is equally distributed. Otherwise it will "crack", as the stems are quite brittle. The experience of having your Chiotilla flower and bear fruit is worth its many years of culture and care.

Type Locality: Mexico

Distribution: Southern Mexico

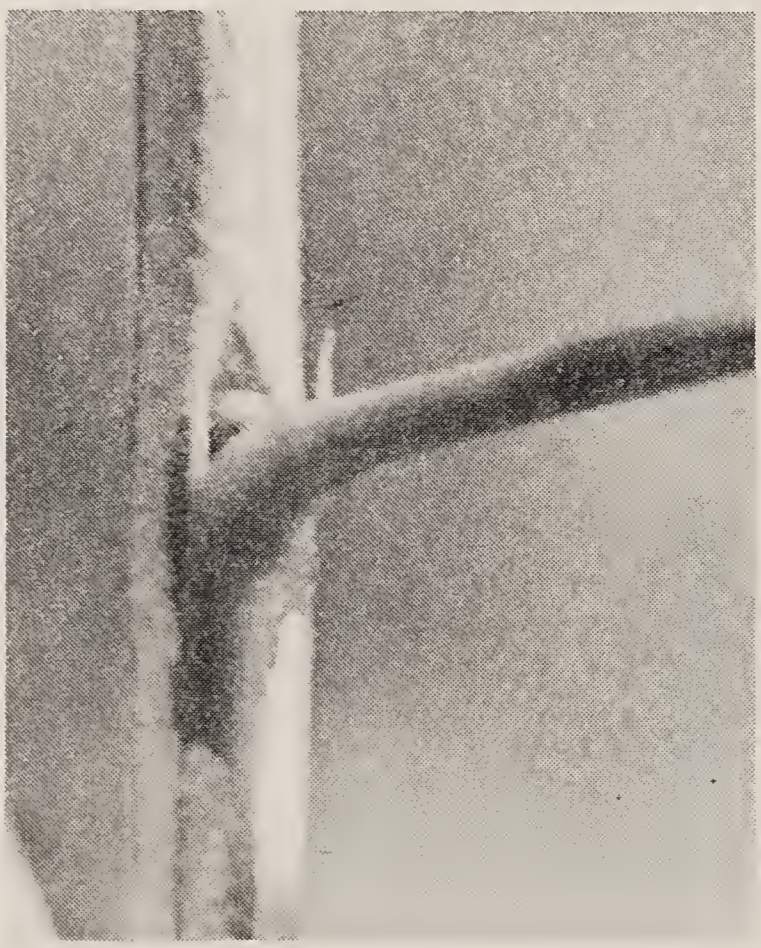
REFERENCE

Britton & Rose, Cactaceae

—WHE

SANTA RITA ACACIA
Acacia millefolia Wats.
Leguminosae
Pea Family

Acacia millefolia is a wide-spreading shrub or a small upright tree ranging from 1 to 5 meters (approx. 3 to 16 ft.) high. There are a few to many slender branches, bare of hair and prickles. At each node of a branch there is a pair of slender, straight, weak spines (stipules). These are short, 2 to 3 mm. long, ascending, and persistent. Leaves are bipinnate, 5 to 15 cm. long. There are 5 to 12 pairs of pinnae (primary leaflets), 2 to 5 cm. in length. The minute, secondary leaflets are numerous. These number 20 to 30 pairs and are linear or oblong with acute tips. They are glabrous or fringed with minute marginal hairs and measure only 2 to 3 mm. long and 1 mm. broad. Flowering occurs from July through September. The inflorescence is a cylindrical spike 2 to 5 cm. long and 10 to 12 mm. in diameter. Flowers on the spike are without stalks. The corolla is white or cream-colored, and the glabrous petals are 2 mm. long and separate. Calyx is 1 mm. long and also white in color. There are numerous (about 50) cream-colored stamens tinged with pink or lavender. Fruit is a flat, thin-walled pod, 7 to 15 cm. long and 9 to 13 mm. broad. It is light brown and devoid of hairs, linear-oblong in shape, and not constricted between the seeds. The reddish-brown flats seed is somewhat broader than long, but near circular, 7 mm. long and 8 to 10 mm. broad.



Nodular stipules on *Acacia millefolia*, slightly magnified.

Leaflets are very small and very numerous, giving the plant an airy look.

Pink-tinged creamy flowers of the Santa Rita Acacia.

Seed pods are four to six inches long, and are translucent.

Santa Rita Acacia extends from southern Arizona into the states of Sonora and Chihuahua in northern Mexico. In Arizona it grows in the mountain ranges east and south of Tucson, in Pima and Cochise counties. Found at elevations from 1070 to 1680 meters (about 3,500 to 5,500 ft), this species is normally situated on rocky canyon slopes and on ridges that are generally of limestone origin. It is present in the upper desert grassland and the lower oak woodland belts of the Lower and Upper Sonoran Zones.

Acacia millefolia can easily be propagated from seed after pretreatment to break seed-coat dormancy. It makes moderate to rapid growth if it is given a full-sun situation on well-drained soil. There is a tendency for this species to sucker at the base, which results in a wide-spread, full shrub. While this is a plant of higher elevations, it also thrives under cultivation in low desert areas. It may require supplemental water during long dry periods.

This native species has been put to very limited use in landscaping desert gardens, yet it makes a handsome ornamental used either as a shrub or in tree form. There is an extended flowering period during which the plant bears numerous creamy spikes, and this comes during the late summer and autumn months when few other shrubs are in bloom.

REFERENCES:

Benson & Darrow, The Trees and Shrubs of the Southwestern Deserts.
Kearny & Peebles, Arizona Flora.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

—JHW

FIELD TRIP

November 11. **Seven Springs.** On an overcast and threatening morning the group explored four small areas before proceeding to the Recreation Area. In one of these, a spectacular display of **Calliandra eriophylla** (Fairy-Duster) in flower was the highlight of the trip with color on the individual plants ranging from the palest of pinks to a deep rose. Other plants seen in flower were: **Allionia incarnata** (Trailing Four-O'Clock), **Cuscuta species** (Dodder), **Pectis papposa** (Chinchweed), **Mirabilis multiflora** (Wild Four-O'Clock), **Hymenothrix loomisii** (Hymenothrix), **Machaeranthera tagetinus** (Aster), Aplopappus laricifolius (Turpentine Bush), **Guierrezia sarothrae** (Snake-Weed), **Eriogonum deflexum** (Skeleton-Weed), **Melampodium leucanthum** (Melampodium), **Tidestromia lanuginosa** (Tidestromia), **Baileya multiradiata** (Desert Marigold), and **Beloperone californica** (Chuparosa).

Lunch in the picnic area came to a sudden close with a heavy shower preceded by hail. After an interval, a few hardy members of the group made a brief foray along the brook but this was quickly ended by a continuing rain which brought the day's activities to an early termination. Attendance was 21. Leader: Rodney Engard
Reporter: J. Harry Lehr

Fairy-Dusters bloomed profusely in November because of the unusual Fall rains. They usually flower in the spring.

GARDEN ACTIVITIES

DECEMBER

Tues.	5th	CACTOMANIACS—Members' photos	8:00 P.M.
Wed.	6th	CLASS—Cultivation of Trees & Shrubs	3:00 P.M.
Thurs.	7th	LECTURE—Cacti of Mexico	3:00 P.M.
Sat.	9th	FIELD TRIP—Fish Creek Canyon	8:30 A.M.
Wed.	13th	CLASS DESERT TRIP—Pinnacle Peak	8:30 A.M.
Thurs.	14th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Thurs.	21st	LECTURE—Desert Botanical Garden doings	3:00 P.M.
Thurs.	28th	LECTURE—Arizona Cacti in Flower	3:00 P.M.

JANUARY

Tues.	2nd	CACTOMANIACS meeting	8:00 P.M.
Thurs.	4th	LECTURE—Arizona Wildflowers	3:00 P.M.
Wed.	10th	CLASS—Desert Plants	3:00 P.M.
Thurs.	11th	LECTURE—Arizona Birds, etc.	3:00 P.M.
Sat.	13th	FIELD TRIP—Lake Pleasant	8:30 A.M.
Wed.	17th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	18th	LECTURE—Arizona Scenics	3:00 P.M.
Tues.	23rd	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	24th	CLASS—Cultivation of Succulents	3:00 P.M.
Thurs.	25th	LECTURE—Cacti of Mexico	3:00 P.M.
Wed.	31st	CLASS—Desert Trees & Shrubs	3:00 P.M.